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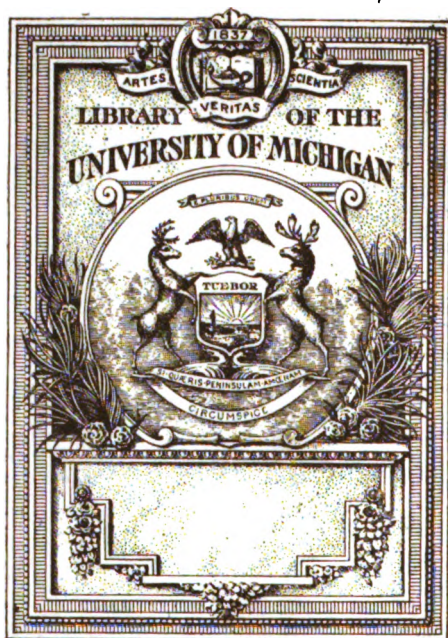
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THE
NAUTICAL ALMANAC
AND
ASTRONOMICAL EPHEMERIS
FOR THE YEAR
1889,
FOR THE MERIDIAN
OF THE
ROYAL OBSERVATORY AT GREENWICH.

PUBLISHED BY ORDER OF
THE LORDS COMMISSIONERS OF THE ADMIRALTY.

London:
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1885.

PRICE TWO SHILLINGS AND SIXPENCE.

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ALPHABETICALLY ARRANGED.

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the small, the Page of the Preface; and the Arabic, the Page of the Book.*

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P R E F A C E.

THE contents and arrangement of the NAUTICAL ALMANAC AND ASTRONOMICAL EPHEMERIS for the year 1889 are the same generally as those of the preceding year.

The mean obliquity of the Ecliptic $= 23^{\circ} 27' 13'' \cdot 27$ on January 1, 1889, and the mean annual diminution $= 0'' \cdot 476$ (LE VERRIER's Solar Tables, page 203).

The Constant of Aberration $= 20'' \cdot 4451$. (STRUVE, *Sur le Coefficient Constant de l'Aberration*, p. 47.)

The Nutations of the Obliquity of the Ecliptic ($\Delta \epsilon$) and of Longitude (ΔL), have been computed by the formulæ :

$$\begin{aligned}\Delta \epsilon &= 9'' \cdot 2237 \cos \Omega - 0'' \cdot 0895 \cos 2 \Omega + 0'' \cdot 5507 \cos 2 \odot \\ \Delta L &= -17'' \cdot 2526 \sin \Omega + 0'' \cdot 2073 \sin 2 \Omega - 1'' \cdot 2693 \sin 2 \odot\end{aligned}$$

where Ω is the mean Longitude of the Moon's ascending Node, and \odot the true Longitude of the Sun. The coefficients are those determined by PETERS.

The places of the Sun are from LEVERRIER's Tables in "*Annales de l'Observatoire Impérial de Paris*," Vol. IV.

The Semidiameter of the Sun at the Earth's mean Distance $= 16' 1'' \cdot 32$, the result of the 12 years' Observations, 1836 to 1847, at the Royal Observatory, Greenwich.

The Equatorial Horizontal Parallax of the Sun, at the Earth's mean Distance $= 8'' \cdot 848$. (NEWCOMB, Washington Observations, 1865, Appendix II., p. 29.)

The Moon's Longitude, Latitude, Horizontal Parallax, and Semidiameter are from HANSEN's *Tables de la Lune*. London, 1857. The Right Ascension and Declination contain NEWCOMB's Corrections prepared and printed for the use of the "American Ephemeris and Nautical Almanac" (Washington, 1878).

The Heliocentric places of Mercury, Venus, Mars, Jupiter, Saturn, Uranus, and Neptune, are from LEVERRIER's Tables in "*Annales de l'Observatoire Impérial de Paris*," Vols. V., VI., XII., and XIV.

The adopted Equatorial Semidiameters of the Planets, at the mean distance of the Earth from the Sun, are :

Mercury,	3'34	(Leverrier's <i>Tables of Mercury</i> , page 182).
Venus,	8'305	(Leverrier's <i>Tables of Venus</i> , page 168).
Mars,	5'55	(Leverrier's <i>Tables of Mars</i> , page 412).
Jupiter,	98'19	- - - - - Polar Sem. = Eq. Sem. \times '939.
Saturn,	83'31	- - - - - Polar Sem. = Eq. Sem. \times '895.
Uranus,	34'28	

The Eclipses of Jupiter's Satellites have been derived from "*Tables Ecliptiques des Satellites de Jupiter*. Par le Baron DE DAMOISEAU. Paris, 1836," excepting Tables I. and III. of each Satellite, which have been computed by ADAMS' Tables in the APPENDIX to the NAUTICAL ALMANAC for 1881. The Occultations, &c. by WOOLHOUSE's Tables in the APPENDIX to the NAUTICAL ALMANAC for 1835, excepting Table II. of each Satellite, which has been adapted to DAMOISEAU's Tables.

The mean Right Ascensions of 183 Standard Stars have been derived (1) from the Table pp. 21, 22 of the Greenwich Nine-year Catalogue, (2) from the Greenwich Clock-star list for 1879, (3) from the Nine-year Catalogue itself, the four Northern Polar Stars included. The mean Declinations have been brought up from the Nine-year Catalogue for 1872, including the corrections of Table p. 27. The Mean places of the remaining southern stars have been obtained from the Cape General Catalogue of 1159 stars, the First Melbourne General Catalogue, and the Cape separate Catalogues, 1871-73, excepting that for α Centauri, the position has been taken from ELKIN (*Über die Parallaxe von α Centauri*, Karlsruhe, 1880.)

The Logarithms of A, B, C, D, and the Quantities for the Reduction of Stars generally, have been computed by BESSEL's formulæ with the co-efficients of PETERS, omitting in C and D the terms $-0.00405 \sin 2 \zeta$ and $-0.0885 \cos 2 \zeta$: the Logarithms of E, F, G, H, and the value of L, by the formulæ in the introduction to the Greenwich Twelve-year Catalogue (*Volume of Greenwich Observations for the year 1847*).

The Moon-Culminating Stars, and Stars occulted by the Moon, have been selected from the British Association Catalogue, and the mean places taken from a manuscript Catalogue to the 6½ magnitude inclusive, adapted to the year 1880, in the construction of which, the following order of preference was observed, viz.

ARRY's Seven-Year, Six-Year, and Twelve-Year Catalogues.

The mean of MIDLER's Bradley, Armagh, and British Association Catalogues, or either of them when the others were not available.

The proper motions adopted are those determined by MAIN and STONE (*Memoirs of the Roy. Astron. Soc.*, Vols. XIX, XXVIII, and XXXIII), excepting that for γ Draconis the proper motion in MÄDLER's Bradley has been used. The magnitudes were chiefly taken from ARGELANDER's *Uranometria Nova*.

The calculations of the Eclipses and Occultations have been made according to the methods and formulæ given by WOOLHOUSE in the APPENDIX to the NAUTICAL ALMANAC for 1836.

The times of High Water at London Bridge have been computed from tables in "An Elementary Treatise on the Tides. By J. W. LUBBOCK, Esq." London, 1839, with corrections of the semimonthly inequality by the Hydrographic Office.

The Tables for finding the Latitude of a place by Observations of the Pole Star (α URSÆ MINORIS) are founded on the following formula:

$$l = a - p \cos h + \frac{1}{2} \sin 1'' (p \sin h)' \tan a$$

where l denotes the latitude, a the true altitude of the Star, p the apparent polar distance, and $h = S - \alpha$ the hour angle of the Star; S being the sidereal time of observation, and α the right ascension of the Star. Table I. contains $p \cos h$ or the *first correction*; and Table II. $\frac{1}{2} \sin 1'' (p \sin h)' \tan a$ or the *second correction*, assuming $p = 77' 0''$, and $a = 19^\circ 30'$. Table III., which depends on the difference between the true and assumed values of p and a , contains the *third correction* increased by $1'$ for the purpose of rendering the quantities additive. A fourth term — $\frac{1}{2} \sin^2 1'' (p \cos h) (p \sin h)''$ is omitted, its greatest value being less than $0'' \cdot 5$.

In the construction of this Ephemeris generally, duplicate and independent computations have been made where necessary; all results admitting of such test have been examined by differencing, and every precaution taken to secure accuracy in the printing.

J. R. HIND,
Superintendent.

Nautical Almanac Office,
3, Verulam Buildings, Gray's Inn, London.
October 24, 1885.

PRINCIPAL ARTICLES OF THE CALENDAR, For the Year 1889.

Golden Number - - - - 9	Dominical Letter - - - - F
Epact - - - - - 28	Roman Indiction - - - - 2
Solar Cycle - - - - - 22	Julian Period - - - - - 6602

FIXED AND MOVABLE FESTIVALS, ANNIVERSARIES, &c. &c.

Epiphany - - - - - Jan. 6	Rogation Sunday - - - - May 26
Septuagesima Sunday - - Feb. 17	Ascension Day—Holy Thursday - - 30
St. David - - - - - Mar. 1	Pentecost—Whit Sunday - June 9
Quinquagesima—Shrove Sunday - 3	Trinity Sunday - - - - - 16
Ash Wednesday - - - - - 6	Corpus Christi - - - - - 20
Quadragesima—1st Sun. in Lent - 10	Accession of Q. Victoria - - - - 20
St. Patrick - - - - - 17	Proclamation - - - - - 21
Annunciation—Lady Day - - - 25	St. John Bapt.—Midsum. Day - - 24
Palm Sunday - - - - - April 14	St. Michael—Michaelmas Day Sept. 29
Good Friday - - - - - 19	Birth of Prince of Wales - - Nov. 9
EASTER SUNDAY - - - - - 21	St. Andrew - - - - - 30
St. George - - - - - 23	1st Sunday in Advent - - Dec. 1
Low Sunday - - - - - 28	St. Thomas - - - - - 21
Birth of Q. Victoria - - - May 24	Christmas Day - - - - - 25

The Year 5650 of the Jewish Era commences on September 26, 1889.

Ramadân (Month of Abstinence observed by the Turks) commences on
May 1, 1889.

The Year 1307 of the Mohammedan Era commences on August 28, 1889.

EXPLANATION OF ASTRONOMICAL SYMBOLS AND ABBREVIATIONS.

☉ The Sun.	♂ Mars.	♌ Conjunction.
☾ The Moon.	♃ Jupiter.	☐ Quadrature.
☿ Mercury.	♄ Saturn.	♌ Opposition.
♀ Venus.	♅ Uranus.	♌ Ascending Node.
☾ or ♂ The Earth.	♆ Neptune.	♎ Descending Node.
h Hours.	° Degrees.	N. North. S. South.
m Minutes of Time.	' Minutes of Arc.	E. East. W. West.
s Seconds of Time.	" Seconds of Arc.	
♈ Aries - - °	IV. ♌ Leo - - 120°	VIII. ♐ Sagittarius 240°
I. ♉ Taurus - - 30	V. ♍ Virgo - - 150	IX. ♑ Capricornus 270
II. ♊ Gemini - 60	VI. ♎ Libra - - 180	X. ♒ Aquarius - 300
III. ♋ Cancer - 90	VII. ♏ Scorpio - 210	XI. ♐ Pisces - 330

ERRATA.

(Continued from p. xi. of the *Nautical Almanac* for 1887.)

NAUTICAL ALMANAC FOR THE YEAR 1888.

Page 467, for July 28, 22	^h ♀	at greatest elong.	19 26 E.
read 29, 9	" "		19 27 W.
for Oct. 7, 18	" "		25 5 W.
read 8, 1	" "		25 5 E.
for Nov. 16, 16	" "		19 25 E.
read 16, 20	" "		19 26 W.

1889.

Mean Noon.	Apparent Obliquity.	The Sun's		Precession in Longi- tude.	Nutation in			Mean Longitude of Moon's Ascending Node.
		Horizontal Parallax.	Aberration.		Long.	Obli- quity.	R. A. (in time.)	
	⁰ 23 27							⁰
Jan. 1	9° 38	9° 00	20° 79	0° 00	—15° 68	—3° 88	—0° 96	111 50° 64
11	9° 55	9° 00	20° 79	1° 38	15° 35	3° 69	0° 94	111 18° 86
21	9° 78	8° 99	20° 77	2° 75	15° 14	3° 46	0° 92	110 47° 09
31	10° 03	8° 98	20° 75	4° 13	—15° 06	—3° 19	—0° 92	110 15° 32
Feb. 10	10° 30	8° 96	20° 71	5° 50	15° 14	2° 92	0° 92	109 43° 55
20	10° 55	8° 94	20° 67	6° 88	15° 37	2° 66	0° 94	109 11° 77
Mar. 2	10° 76	8° 92	20° 62	8° 26	—15° 73	—2° 44	—0° 96	108 40° 00
12	10° 91	8° 90	20° 56	9° 63	16° 17	2° 27	0° 99	108 8° 23
22	11° 01	8° 87	20° 50	11° 01	16° 66	2° 17	1° 02	107 36° 46
Apr. 1	11° 03	8° 85	20° 44	12° 38	—17° 12	—2° 13	—1° 05	107 4° 68
11	10° 99	8° 82	20° 39	13° 76	17° 51	2° 16	1° 07	106 32° 91
21	10° 92	8° 80	20° 33	15° 13	17° 83	2° 22	1° 09	106 1° 14
May 1	10° 81	8° 78	20° 28	16° 51	—17° 98	—2° 31	—1° 10	105 29° 37
11	10° 69	8° 76	20° 23	17° 89	18° 01	2° 42	1° 10	104 57° 69
21	10° 60	8° 74	20° 19	19° 26	17° 90	2° 51	1° 09	104 25° 82
31	10° 54	8° 72	20° 16	20° 64	—17° 66	—2° 56	—1° 08	103 54° 05
June 10	10° 51	8° 71	20° 13	22° 01	17° 32	2° 56	1° 06	103 22° 28
20	10° 55	8° 70	20° 12	23° 39	16° 95	2° 52	1° 04	102 50° 51
30	10° 64	8° 70	20° 11	24° 77	—16° 56	—2° 42	—1° 01	102 18° 73
July 10	10° 79	8° 70	20° 11	26° 14	16° 22	2° 24	0° 99	101 46° 96
20	11° 00	8° 71	20° 12	27° 52	15° 95	2° 03	0° 98	101 15° 19
30	11° 23	8° 72	20° 14	28° 89	—15° 80	—1° 78	—0° 97	100 43° 42
Aug. 9	11° 48	8° 73	20° 17	30° 27	15° 79	1° 52	0° 96	100 11° 64
19	11° 73	8° 75	20° 21	31° 65	15° 91	1° 25	0° 97	99 39° 87
29	11° 96	8° 77	20° 26	33° 02	—16° 16	—1° 01	—0° 99	99 8° 10
Sept. 8	12° 14	8° 79	20° 31	34° 40	16° 52	0° 81	1° 01	98 36° 33
18	12° 28	8° 81	20° 36	35° 77	16° 95	0° 67	1° 04	98 4° 55
28	12° 35	8° 84	20° 42	37° 15	—17° 40	—0° 58	—1° 06	97 32° 78
Oct. 8	12° 35	8° 86	20° 48	38° 53	17° 82	0° 57	1° 09	97 1° 01
18	12° 30	8° 89	20° 54	39° 90	18° 17	0° 60	1° 11	96 29° 24
28	12° 21	8° 91	20° 59	41° 28	—18° 40	—0° 69	—1° 13	95 57° 47
Nov. 7	12° 08	8° 93	20° 64	42° 65	18° 48	0° 79	1° 13	95 25° 69
17	11° 97	8° 95	20° 69	44° 03	18° 42	0° 89	1° 13	94 53° 92
27	11° 87	8° 97	20° 73	45° 40	—18° 19	—0° 98	—1° 11	94 22° 15
Dec. 7	11° 82	8° 98	20° 76	46° 78	17° 85	1° 01	1° 09	93 50° 38
17	11° 83	8° 99	20° 78	48° 16	17° 43	0° 99	1° 06	93 18° 60
27	11° 90	9° 00	20° 79	49° 53	—17° 00	—0° 90	—1° 04	92 46° 83
37	12° 05	9° 00	20° 79	50° 91	—16° 58	—0° 74	—1° 01	92 15° 06
Mean Obliquity, Jan. 1, 1889 - - - - - ⁰ 23 27 13 27 Precession for the Year 1889 - - - - - - - 50° 26 13 Precession for 1 Day - - - - - - - - - 0° 13 76								Daily Motion —3° 17 73

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
Tues.	1	18 ^h 49 ^m 19 ^s 73	11 ^s 041	S. 22 58 5 ^s 0	13 ^s 00	1 11 ^m 04	4 0 ^s 48	1 ^s 181
Wed.	2	18 53 44 54	11 026	22 52 39 3	14 14	1 10 99	4 28 65	1 166
Thur.	3	18 58 8 96	11 009	22 46 46 2	15 28	1 10 94	4 56 45	1 150
Frid.	4	19 2 32 98	10 991	22 40 25 9	16 41	1 10 89	5 23 83	1 131
Sat.	5	19 6 56 54	10 972	22 33 38 7	17 53	1 10 83	5 50 76	1 112
Sun.	6	19 11 19 62	10 951	22 26 24 7	18 64	1 10 77	6 17 21	1 092
Mon.	7	19 15 42 20	10 930	22 18 44 1	19 74	1 10 70	6 43 16	1 070
Tues.	8	19 20 4 24	10 907	22 10 37 2	20 83	1 10 63	7 8 58	1 047
Wed.	9	19 24 25 73	10 883	22 2 4 2	21 91	1 10 56	7 33 44	1 024
Thur.	10	19 28 46 63	10 858	21 53 5 4	22 98	1 10 48	7 57 71	0 999
Frid.	11	19 33 6 93	10 833	21 43 41 0	24 04	1 10 40	8 21 39	0 974
Sat.	12	19 37 26 60	10 806	21 33 51 3	25 09	1 10 32	8 44 44	0 947
Sun.	13	19 41 45 63	10 779	21 23 36 7	26 12	1 10 23	9 6 85	0 920
Mon.	14	19 46 4 00	10 751	21 12 57 4	27 14	1 10 14	9 28 61	0 892
Tues.	15	19 50 21 69	10 722	21 1 53 7	28 16	1 10 05	9 49 68	0 864
Wed.	16	19 54 38 68	10 693	20 50 25 9	29 15	1 9 95	10 10 06	0 834
Thur.	17	19 58 54 96	10 663	20 38 34 3	30 14	1 9 85	10 29 73	0 805
Frid.	18	20 3 10 52	10 633	20 26 19 4	31 10	1 9 75	10 48 68	0 774
Sat.	19	20 7 25 35	10 602	20 13 41 3	32 06	1 9 65	11 6 90	0 744
Sun.	20	20 11 39 43	10 571	20 0 40 5	33 00	1 9 55	11 24 38	0 713
Mon.	21	20 15 52 76	10 540	19 47 17 2	33 93	1 9 45	11 41 11	0 681
Tues.	22	20 20 5 33	10 508	19 33 31 8	34 84	1 9 34	11 57 08	0 650
Wed.	23	20 24 17 14	10 476	19 19 24 7	35 74	1 9 23	12 12 29	0 618
Thur.	24	20 28 28 18	10 444	19 4 56 2	36 62	1 9 12	12 26 73	0 586
Frid.	25	20 32 38 44	10 411	18 50 6 7	37 49	1 9 01	12 40 40	0 553
Sat.	26	20 36 47 92	10 379	18 34 56 5	38 35	1 8 89	12 53 29	0 521
Sun.	27	20 40 56 61	10 345	18 19 26 1	39 18	1 8 78	13 5 39	0 488
Mon.	28	20 45 4 50	10 312	18 3 35 9	40 00	1 8 66	13 16 70	0 454
Tues.	29	20 49 11 59	10 278	17 47 26 2	40 80	1 8 55	13 27 20	0 421
Wed.	30	20 53 17 86	10 244	17 30 57 4	41 59	1 8 43	13 36 89	0 386
Thur.	31	20 57 23 31	10 210	17 14 10 1	42 35	1 8 32	13 45 75	0 352
Frid.	32	21 1 27 92	10 175	S. 16 57 4 5	43 10	1 8 20	13 53 79	0 318

* Mean Time of the Semidiameter passing may be found by subtracting 0^s 19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Tues.	1	18 49 19.00	S. 22 58 5.9	16 18.2	4 0.40	18 45 18.59
Wed.	2	18 53 43.72	22 52 40.3	16 18.2	4 28.56	18 49 15.15
Thur.	3	18 58 8.06	22 46 47.4	16 18.2	4 56.35	18 53 11.71
Frid.	4	19 2 31.99	22 40 27.4	16 18.2	5 23.73	18 57 8.27
Sat.	5	19 6 55.47	22 33 40.4	16 18.2	5 50.65	19 1 4.82
Sun.	6	19 11 18.48	22 26 26.6	16 18.2	6 17.10	19 5 1.38
Mon.	7	19 15 40.98	22 18 46.3	16 18.1	6 43.04	19 8 57.94
Tues.	8	19 20 2.95	22 10 39.6	16 18.1	7 8.45	19 12 54.50
Wed.	9	19 24 24.36	22 2 6.9	16 18.1	7 33.31	19 16 51.05
Thur.	10	19 28 45.19	21 53 8.4	16 18.0	7 57.58	19 20 47.61
Frid.	11	19 33 5.42	21 43 44.4	16 18.0	8 21.25	19 24 44.17
Sat.	12	19 37 25.03	21 33 55.0	16 17.9	8 44.30	19 28 40.72
Sun.	13	19 41 43.99	21 23 40.6	16 17.9	9 6.71	19 32 37.28
Mon.	14	19 46 2.30	21 13 1.7	16 17.8	9 28.46	19 36 33.84
Tues.	15	19 50 19.93	21 1 58.3	16 17.7	9 49.54	19 40 30.40
Wed.	16	19 54 36.87	20 50 30.8	16 17.7	10 9.92	19 44 26.95
Thur.	17	19 58 53.10	20 38 39.6	16 17.6	10 29.59	19 48 23.51
Frid.	18	20 3 8.61	20 26 25.0	16 17.5	10 48.54	19 52 20.07
Sat.	19	20 7 23.39	20 13 47.2	16 17.4	11 6.77	19 56 16.62
Sun.	20	20 11 37.42	20 0 46.7	16 17.3	11 24.25	20 0 13.18
Mon.	21	20 15 50.71	19 47 23.8	16 17.2	11 40.98	20 4 9.73
Tues.	22	20 20 3.24	19 33 38.8	16 17.1	11 56.95	20 8 6.29
Wed.	23	20 24 15.01	19 19 32.0	16 17.0	12 12.16	20 12 2.85
Thur.	24	20 28 26.01	19 5 3.8	16 16.9	12 26.61	20 15 59.40
Frid.	25	20 32 36.24	18 50 14.6	16 16.7	12 40.29	20 19 55.96
Sat.	26	20 36 45.69	18 35 4.8	16 16.6	12 53.18	20 23 52.51
Sun.	27	20 40 54.36	18 19 34.7	16 16.5	13 5.29	20 27 49.07
Mon.	28	20 45 2.22	18 3 44.7	16 16.3	13 16.60	20 31 45.63
Tues.	29	20 49 9.28	17 47 35.3	16 16.2	13 27.10	20 35 42.18
Wed.	30	20 53 15.54	17 31 6.9	16 16.1	13 36.80	20 39 38.74
Thur.	31	20 57 20.97	17 14 19.8	16 15.9	13 45.67	20 43 35.29
Frid.	32	21 1 25.57	S. 16 57 14.5	16 15.8	13 53.72	20 47 31.85

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	281 20 17.4	N. 0° 23	9.9926585	5 13 49.85	16 36.9	16 34.1	60 52.2	60 42.0
2	282 21 29.0	N. 0° 08	.9926606	5 9 53.94	16 30.1	16 25.2	60 27.6	60 9.4
3	283 22 40.6	S. 0° 06	.9926643	5 5 58.03	16 19.3	16 12.7	59 47.9	59 23.7
4	284 23 51.8	0° 19	9.9926695	5 2 2.12	16 5.5	15 58.0	58 57.4	58 29.8
5	285 25 2.7	0° 30	.9926765	4 58 6.21	15 50.3	15 42.5	58 1.5	57 33.2
6	286 26 13.2	0° 39	.9926853	4 54 10.30	15 35.0	15 27.7	57 5.4	56 38.7
7	287 27 23.2	0° 45	9.9926962	4 50 14.38	15 20.8	15 14.4	56 13.4	55 49.9
8	288 28 32.7	0° 49	.9927091	4 46 18.47	15 8.5	15 3.3	55 28.4	55 9.3
9	289 29 41.6	0° 50	.9927242	4 42 22.56	14 58.7	14 54.8	54 52.5	54 38.3
10	290 30 49.9	0° 48	9.9927416	4 38 26.65	14 51.6	14 49.1	54 26.6	54 17.4
11	291 31 57.7	0° 44	.9927614	4 34 30.74	14 47.3	14 46.1	54 10.7	54 6.4
12	292 33 4.8	0° 38	.9927837	4 30 34.83	14 45.6	14 45.6	54 4.4	54 4.5
13	293 34 11.3	0° 30	9.9928085	4 26 38.92	14 46.2	14 47.3	54 6.7	54 10.7
14	294 35 17.2	0° 21	.9928359	4 22 43.00	14 48.8	14 50.8	54 16.4	54 23.6
15	295 36 22.5	S. 0° 10	.9928660	4 18 47.09	14 53.1	14 55.8	54 32.1	54 41.8
16	296 37 27.1	N. 0° 02	9.9928988	4 14 51.18	14 58.7	15 1.8	54 52.4	55 3.9
17	297 38 31.1	0° 14	.9929344	4 10 55.27	15 5.1	15 8.6	55 16.1	55 29.0
18	298 39 34.5	0° 25	.9929728	4 6 59.36	15 12.3	15 16.0	55 42.3	55 56.0
19	299 40 37.2	0° 35	9.9930139	4 3 3.45	15 19.9	15 23.8	56 10.1	56 24.5
20	300 41 39.3	0° 45	.9930576	3 59 7.54	15 27.8	15 31.9	56 39.2	56 54.1
21	301 42 40.8	0° 52	.9931039	3 55 11.63	15 36.0	15 40.2	57 9.3	57 24.8
22	302 43 41.8	0° 57	9.9931528	3 51 15.72	15 44.5	15 48.8	57 40.4	57 56.2
23	303 44 42.3	0° 59	.9932040	3 47 19.81	15 53.2	15 57.5	58 12.1	58 27.9
24	304 45 42.2	0° 58	.9932575	3 43 23.90	16 1.7	16 5.9	58 43.5	58 58.7
25	305 46 41.6	0° 54	9.9933132	3 39 27.99	16 9.8	16 13.5	59 13.2	59 26.7
26	306 47 40.5	0° 46	.9933707	3 35 32.08	16 16.8	16 19.7	59 38.9	59 49.4
27	307 48 38.8	0° 36	.9934299	3 31 36.17	16 22.0	16 23.6	59 57.8	60 3.8
28	308 49 36.5	0° 24	9.9934908	3 27 40.26	16 24.5	16 24.6	60 7.1	60 7.3
29	309 50 33.3	N. 0° 10	.9935532	3 23 44.35	16 23.8	16 22.0	60 4.3	59 57.9
30	310 51 29.2	S. 0° 05	.9936168	3 19 48.44	16 19.4	16 15.9	59 48.3	59 35.4
31	311 52 24.1	0° 19	.9936817	3 15 52.53	16 11.6	16 6.5	59 19.5	59 1.0
32	312 53 17.8	S. 0° 31	9.9937479	3 11 56.62	16 0.8	15 54.7	58 40.2	58 17.7

MEAN TIME.

THE MOON'S

Day of the Month.

	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	276 2 37.0	283 30 36.2	N. 1 23 9.5	N. 0 42 34.7	29.1	* *	12 11.6
2	290 55 25.3	298 16 7.4	N. 0 1 32.7	S. 0 39 8.8	0.6	0 43.0	13 13.8
3	305 31 54.1	312 42 5.1	S. 1 18 45.3	1 56 36.6	1.6	1 43.9	14 12.9
4	319 46 10.4	326 43 49.7	2 32 7.8	3 4 50.1	2.6	2 40.9	15 7.7
5	333 34 52.8	340 19 18.1	3 34 20.8	4 0 22.9	3.6	3 33.5	15 58.3
6	346 57 12.5	353 28 50.1	4 22 44.8	4 41 19.6	4.6	4 22.2	16 45.3
7	359 54 31.0	6 14 40.2	4 56 3.9	5 6 57.8	5.6	5 7.8	17 29.8
8	12 29 46.3	18 40 20.7	5 14 3.3	5 17 24.9	6.6	5 51.4	18 12.8
9	24 46 56.8	30 50 8.9	5 17 7.9	5 13 19.2	7.6	6 34.0	18 55.2
10	36 50 31.8	42 48 40.1	5 6 5.9	4 55 36.3	8.6	7 16.5	19 38.1
11	48 45 7.4	54 40 26.5	4 41 59.3	4 25 24.2	9.6	7 59.9	20 22.0
12	60 35 9.1	66 29 44.4	4 6 1.0	3 44 0.9	10.6	8 44.5	21 7.5
13	72 24 40.2	78 20 22.0	3 19 35.6	2 52 58.5	11.6	9 31.0	21 54.9
14	84 17 13.1	90 15 34.7	2 24 23.6	1 54 6.8	12.6	10 19.3	22 43.9
15	96 15 45.5	102 18 2.3	1 22 25.2	S. 0 49 37.1	13.6	11 8.9	23 34.1
16	108 22 39.3	114 29 49.4	S. 0 16 3.0	N. 0 17 55.9	14.6	11 59.4	* *
17	120 39 43.0	126 52 29.2	N. 0 51 56.8	1 25 35.9	15.6	12 49.9	0 24.7
18	133 8 15.4	139 27 7.8	1 58 28.8	2 30 10.1	16.6	13 39.8	1 15.0
19	145 49 11.9	152 14 31.7	3 0 14.9	3 28 17.7	17.6	14 28.6	2 4.3
20	158 43 11.6	165 15 15.0	3 53 54.7	4 16 42.0	18.6	15 16.5	2 52.7
21	171 50 44.9	178 29 44.1	4 36 17.4	4 52 20.7	19.6	16 3.9	3 40.2
22	185 12 15.3	191 58 25.3	5 4 33.3	5 12 39.4	20.6	16 51.5	4 27.6
23	198 47 59.7	205 41 13.4	5 16 25.8	5 15 42.8	21.6	17 40.2	5 15.6
24	212 37 59.2	219 38 12.7	5 10 23.9	5 0 26.6	22.6	18 31.0	6 5.2
25	226 41 46.5	233 48 29.9	4 45 53.5	4 26 51.5	23.6	19 24.6	6 57.4
26	240 58 7.7	248 10 20.8	4 3 32.9	3 36 15.7	24.6	20 21.7	7 52.7
27	255 24 44.9	262 40 50.9	3 5 23.1	2 31 24.1	25.6	21 21.6	8 51.3
28	269 58 5.0	277 15 48.7	1 54 52.3	N. 1 16 26.0	26.6	22 23.2	9 52.3
29	284 33 20.6	291 49 56.3	N. 0 36 46.6	S. 0 3 22.5	27.6	23 24.4	10 54.0
30	299 4 50.5	306 17 17.6	S. 0 43 17.9	1 22 16.5	28.6	* *	11 54.3
31	313 26 34.3	320 32 0.4	1 59 38.1	2 34 46.5	0.1	0 23.3	12 51.5
32	327 33 0.1	334 29 3.7	S. 3 7 10.1	S. 3 36 22.7	1.1	1 18.7	13 44.9

The Moon's Longitude and Latitude are from HANSEN'S Tables *direct*; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 1.					THURSDAY 3.				
0	18 26 2.24	26.976	S. 21 55 46.9	16.48	0	20 32 56.35	25.402	S. 20 10 16.1	57.53
1	18 28 44.10	26.977	21 57 20.8	14.83	1	20 35 28.58	25.342	20 4 27.1	58.82
2	18 31 25.96	26.976	21 58 44.8	13.17	2	20 38 0.45	25.281	19 58 30.3	60.10
3	18 34 7.81	26.973	21 59 58.8	11.50	3	20 40 31.95	25.219	19 52 25.9	61.37
4	18 36 49.63	26.968	22 1 2.8	9.85	4	20 43 3.08	25.158	19 46 13.9	62.62
5	18 39 31.43	26.963	22 1 57.0	8.20	5	20 45 33.84	25.095	19 39 54.5	63.85
6	18 42 13.18	26.955	22 2 41.2	6.53	6	20 48 4.22	25.032	19 33 27.7	65.08
7	18 44 54.89	26.946	22 3 15.4	4.88	7	20 50 34.22	24.968	19 26 53.6	66.29
8	18 47 36.53	26.935	22 3 39.7	3.23	8	20 53 3.84	24.904	19 20 12.2	67.48
9	18 50 18.11	26.923	22 3 54.1	1.58	9	20 55 33.07	24.839	19 13 23.8	68.66
10	18 52 59.61	26.910	22 3 58.6	0.08	10	20 58 1.91	24.774	19 6 28.3	69.83
11	18 55 41.03	26.895	22 3 53.2	1.72	11	21 0 30.36	24.708	18 59 25.9	70.97
12	18 58 22.35	26.878	22 3 38.0	3.36	12	21 2 58.41	24.643	18 52 16.7	72.10
13	19 1 3.57	26.860	22 3 12.9	5.01	13	21 5 26.07	24.576	18 45 0.7	73.22
14	19 3 44.67	26.840	22 2 37.9	6.65	14	21 7 53.32	24.509	18 37 38.1	74.32
15	19 6 25.65	26.819	22 1 53.1	8.28	15	21 10 20.18	24.443	18 30 8.9	75.41
16	19 9 6.50	26.797	22 0 58.5	9.91	16	21 12 46.63	24.375	18 22 33.2	76.48
17	19 11 47.21	26.773	21 59 54.2	11.53	17	21 15 12.68	24.308	18 14 51.1	77.54
18	19 14 27.77	26.748	21 58 40.1	13.15	18	21 17 38.33	24.240	18 7 2.7	78.58
19	19 17 8.18	26.721	21 57 16.4	14.76	19	21 20 3.56	24.172	17 59 8.2	79.60
20	19 19 48.42	26.692	21 55 43.0	16.38	20	21 22 28.39	24.104	17 51 7.5	80.62
21	19 22 28.48	26.662	21 53 59.9	17.98	21	21 24 52.81	24.035	17 43 0.8	81.61
22	19 25 8.36	26.631	21 52 7.3	19.56	22	21 27 16.81	23.967	17 34 48.2	82.59
23	19 27 48.05	26.598	S. 21 50 5.2	21.15	23	21 29 40.41	23.898	S. 17 26 29.7	83.56
WEDNESDAY 2.					FRIDAY 4.				
0	19 30 27.54	26.564	S. 21 47 53.5	22.73	0	21 32 3.59	23.829	S. 17 18 5.5	84.50
1	19 33 6.82	26.528	21 45 32.4	24.30	1	21 34 26.36	23.761	17 9 35.7	85.43
2	19 35 45.88	26.493	21 43 1.9	25.86	2	21 36 48.72	23.693	17 1 0.3	86.35
3	19 38 24.73	26.455	21 40 22.1	27.41	3	21 39 10.67	23.624	16 52 19.5	87.25
4	19 41 3.34	26.415	21 37 33.0	28.95	4	21 41 32.21	23.555	16 43 33.3	88.14
5	19 43 41.71	26.374	21 34 34.7	30.49	5	21 43 53.33	23.486	16 34 41.8	89.02
6	19 46 19.83	26.333	21 31 27.1	32.02	6	21 46 14.04	23.418	16 25 45.1	89.88
7	19 48 57.70	26.290	21 28 10.5	33.53	7	21 48 34.34	23.350	16 16 43.3	90.72
8	19 51 35.31	26.247	21 24 44.8	35.03	8	21 50 54.24	23.282	16 7 36.5	91.54
9	19 54 12.66	26.202	21 21 10.1	36.53	9	21 53 13.72	23.213	15 58 24.8	92.35
10	19 56 49.73	26.155	21 17 26.4	38.03	10	21 55 32.79	23.144	15 49 8.3	93.15
11	19 59 26.52	26.107	21 13 33.8	39.49	11	21 57 51.45	23.076	15 39 47.0	93.93
12	20 2 3.01	26.058	21 9 32.5	40.95	12	22 0 9.70	23.008	15 30 21.1	94.69
13	20 4 39.21	26.009	21 5 22.4	42.40	13	22 2 27.55	22.942	15 20 50.7	95.44
14	20 7 15.12	25.958	21 1 3.7	43.83	14	22 4 45.00	22.874	15 11 15.8	96.18
15	20 9 50.71	25.906	20 56 36.4	45.26	15	22 7 2.04	22.807	15 1 36.6	96.90
16	20 12 25.99	25.854	20 52 0.6	46.68	16	22 9 18.68	22.740	14 51 53.0	97.61
17	20 15 0.96	25.801	20 47 16.3	48.08	17	22 11 34.92	22.673	14 42 5.3	98.29
18	20 17 35.60	25.746	20 42 23.6	49.47	18	22 13 50.76	22.608	14 32 13.5	98.98
19	20 20 9.91	25.691	20 37 22.6	50.84	19	22 16 6.21	22.542	14 22 17.6	99.64
20	20 22 43.89	25.635	20 32 13.5	52.20	20	22 18 21.26	22.476	14 12 17.8	100.29
21	20 25 17.53	25.578	20 26 56.2	53.56	21	22 20 35.92	22.411	14 2 14.1	100.93
22	20 27 50.82	25.519	20 21 30.8	54.90	22	22 22 50.19	22.346	13 52 6.7	101.55
23	20 30 23.76	25.461	S. 20 15 57.4	56.23	23	22 25 4.07	22.281	13 41 55.5	102.16
24	20 32 56.35	25.402	S. 20 10 16.1	57.53	24	22 27 17.56	22.217	S. 13 31 40.8	102.74

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 5.					MONDAY 7.				
0	22 27 17 ^s 56	22 ^m 217	S. 13 31 40 ^s 8	102 ^m 74	0	0 7 31 ^s 21	19 ^m 776	S. 4 33 50 ^s 0	117 ^m 12
1	22 29 30 ^s 67	22 ^m 153	13 21 22 ^s 6	103 ^m 33	1	0 9 20 ^s 76	19 ^m 740	4 22 7 ^s 1	117 ^m 17
2	22 31 43 ^s 40	22 ^m 090	13 11 0 ^s 9	103 ^m 89	2	0 11 28 ^s 09	19 ^m 705	4 10 24 ^s 0	117 ^m 20
3	22 33 55 ^s 75	22 ^m 027	13 0 35 ^s 9	104 ^m 44	3	0 13 26 ^s 22	19 ^m 672	3 58 40 ^s 7	117 ^m 24
4	22 36 7 ^s 72	21 ^m 964	12 50 7 ^s 6	104 ^m 98	4	0 15 24 ^s 15	19 ^m 638	3 46 57 ^s 1	117 ^m 27
5	22 38 19 ^s 32	21 ^m 903	12 39 36 ^s 1	105 ^m 51	5	0 17 21 ^s 88	19 ^m 606	3 35 13 ^s 5	117 ^m 28
6	22 40 30 ^s 55	21 ^m 841	12 29 1 ^s 5	106 ^m 03	6	0 19 19 ^s 42	19 ^m 574	3 23 29 ^s 7	117 ^m 30
7	22 42 41 ^s 41	21 ^m 780	12 18 23 ^s 8	106 ^m 53	7	0 21 16 ^s 77	19 ^m 543	3 11 45 ^s 9	117 ^m 30
8	22 44 51 ^s 91	21 ^m 719	12 7 43 ^s 2	107 ^m 00	8	0 23 13 ^s 93	19 ^m 513	3 0 2 ^s 1	117 ^m 29
9	22 47 2 ^s 04	21 ^m 659	11 56 59 ^s 8	107 ^m 48	9	0 25 10 ^s 92	19 ^m 483	2 48 18 ^s 4	117 ^m 28
10	22 49 11 ^s 82	21 ^m 600	11 46 13 ^s 5	107 ^m 94	10	0 27 7 ^s 72	19 ^m 453	2 36 34 ^s 7	117 ^m 27
11	22 51 21 ^s 24	21 ^m 540	11 35 24 ^s 5	108 ^m 39	11	0 29 4 ^s 35	19 ^m 424	2 24 51 ^s 2	117 ^m 23
12	22 53 30 ^s 30	21 ^m 481	11 24 32 ^s 8	108 ^m 83	12	0 31 0 ^s 81	19 ^m 397	2 13 8 ^s 0	117 ^m 18
13	22 55 39 ^s 01	21 ^m 423	11 13 38 ^s 6	109 ^m 24	13	0 32 57 ^s 11	19 ^m 369	2 1 25 ^s 0	117 ^m 15
14	22 57 47 ^s 38	21 ^m 367	11 2 41 ^s 9	109 ^m 66	14	0 34 53 ^s 24	19 ^m 343	1 49 42 ^s 2	117 ^m 10
15	22 59 55 ^s 41	21 ^m 309	10 51 42 ^s 7	110 ^m 06	15	0 36 49 ^s 22	19 ^m 318	1 37 59 ^s 8	117 ^m 03
16	23 2 3 ^s 09	21 ^m 253	10 40 41 ^s 2	110 ^m 44	16	0 38 45 ^s 05	19 ^m 292	1 26 17 ^s 8	116 ^m 98
17	23 4 10 ^s 44	21 ^m 198	10 29 37 ^s 4	110 ^m 82	17	0 40 40 ^s 72	19 ^m 267	1 14 36 ^s 1	116 ^m 91
18	23 6 17 ^s 46	21 ^m 142	10 18 31 ^s 4	111 ^m 18	18	0 42 36 ^s 25	19 ^m 243	1 2 54 ^s 9	116 ^m 83
19	23 8 24 ^s 14	21 ^m 087	10 7 23 ^s 3	111 ^m 53	19	0 44 31 ^s 64	19 ^m 220	0 51 14 ^s 2	116 ^m 73
20	23 10 30 ^s 50	21 ^m 033	9 56 13 ^s 1	111 ^m 87	20	0 46 26 ^s 89	19 ^m 198	0 39 34 ^s 1	116 ^m 63
21	23 12 36 ^s 54	20 ^m 979	9 45 0 ^s 9	112 ^m 19	21	0 48 22 ^s 01	19 ^m 176	0 27 54 ^s 6	116 ^m 53
22	23 14 42 ^s 25	20 ^m 926	9 33 46 ^s 8	112 ^m 51	22	0 50 17 ^s 00	19 ^m 155	0 16 15 ^s 7	116 ^m 43
23	23 16 47 ^s 65	20 ^m 874	S. 9 22 30 ^s 8	112 ^m 82	23	0 52 11 ^s 87	19 ^m 134	S. 0 4 37 ^s 4	116 ^m 32
SUNDAY 6.					TUESDAY 8.				
0	23 18 52 ^s 74	20 ^m 823	S. 9 11 13 ^s 0	113 ^m 11	0	0 54 6 ^s 61	19 ^m 114	N. 0 7 0 ^s 1	116 ^m 19
1	23 20 57 ^s 52	20 ^m 772	8 59 53 ^s 5	113 ^m 39	1	0 56 1 ^s 24	19 ^m 095	0 18 36 ^s 9	116 ^m 07
2	23 23 2 ^s 00	20 ^m 721	8 48 32 ^s 3	113 ^m 67	2	0 57 55 ^s 75	19 ^m 076	0 30 12 ^s 9	115 ^m 93
3	23 25 6 ^s 17	20 ^m 671	8 37 9 ^s 5	113 ^m 93	3	0 59 50 ^s 15	19 ^m 058	0 41 48 ^s 0	115 ^m 78
4	23 27 10 ^s 05	20 ^m 622	8 25 45 ^s 2	114 ^m 17	4	1 1 44 ^s 45	19 ^m 042	0 53 22 ^s 3	115 ^m 64
5	23 29 13 ^s 63	20 ^m 573	8 14 19 ^s 5	114 ^m 41	5	1 3 38 ^s 65	19 ^m 025	1 4 55 ^s 7	115 ^m 48
6	23 31 16 ^s 03	20 ^m 526	8 2 52 ^s 3	114 ^m 64	6	1 5 32 ^s 75	19 ^m 008	1 16 28 ^s 1	115 ^m 32
7	23 33 19 ^s 94	20 ^m 478	7 51 23 ^s 8	114 ^m 87	7	1 7 26 ^s 75	18 ^m 993	1 27 59 ^s 5	115 ^m 15
8	23 35 22 ^s 66	20 ^m 431	7 39 53 ^s 9	115 ^m 08	8	1 9 20 ^s 67	18 ^m 979	1 39 29 ^s 9	114 ^m 98
9	23 37 25 ^s 11	20 ^m 386	7 28 22 ^s 9	115 ^m 27	9	1 11 14 ^s 50	18 ^m 964	1 50 59 ^s 3	114 ^m 81
10	23 39 27 ^s 29	20 ^m 340	7 16 50 ^s 7	115 ^m 46	10	1 13 8 ^s 24	18 ^m 951	2 2 27 ^s 6	114 ^m 62
11	23 41 29 ^s 19	20 ^m 295	7 5 17 ^s 4	115 ^m 64	11	1 15 1 ^s 91	18 ^m 939	2 13 54 ^s 7	114 ^m 41
12	23 43 30 ^s 83	20 ^m 252	6 53 43 ^s 0	115 ^m 81	12	1 16 55 ^s 51	18 ^m 927	2 25 20 ^s 5	114 ^m 21
13	23 45 32 ^s 21	20 ^m 208	6 42 7 ^s 7	115 ^m 97	13	1 18 49 ^s 03	18 ^m 915	2 36 45 ^s 2	114 ^m 02
14	23 47 33 ^s 33	20 ^m 165	6 30 31 ^s 4	116 ^m 12	14	1 20 42 ^s 49	18 ^m 904	2 48 8 ^s 7	113 ^m 80
15	23 49 34 ^s 19	20 ^m 123	6 18 54 ^s 3	116 ^m 26	15	1 22 35 ^s 88	18 ^m 893	2 59 30 ^s 8	113 ^m 58
16	23 51 34 ^s 81	20 ^m 083	6 7 16 ^s 3	116 ^m 39	16	1 24 29 ^s 21	18 ^m 884	3 10 51 ^s 6	113 ^m 36
17	23 53 35 ^s 18	20 ^m 042	5 55 37 ^s 6	116 ^m 51	17	1 26 22 ^s 49	18 ^m 875	3 22 11 ^s 1	113 ^m 13
18	23 55 35 ^s 31	20 ^m 002	5 43 58 ^s 2	116 ^m 62	18	1 28 15 ^s 71	18 ^m 866	3 33 29 ^s 2	112 ^m 89
19	23 57 35 ^s 20	19 ^m 962	5 32 18 ^s 2	116 ^m 73	19	1 30 8 ^s 88	18 ^m 858	3 44 45 ^s 8	112 ^m 65
20	23 59 34 ^s 85	19 ^m 923	5 20 37 ^s 5	116 ^m 83	20	1 32 2 ^s 01	18 ^m 852	3 56 1 ^s 0	112 ^m 41
21	0 1 34 ^s 28	19 ^m 885	5 8 56 ^s 3	116 ^m 91	21	1 33 55 ^s 10	18 ^m 845	4 7 14 ^s 7	112 ^m 15
22	0 3 33 ^s 47	19 ^m 848	4 57 14 ^s 6	116 ^m 98	22	1 35 48 ^s 15	18 ^m 839	4 18 26 ^s 8	111 ^m 89
23	0 5 32 ^s 45	19 ^m 812	4 45 32 ^s 5	117 ^m 05	23	1 37 41 ^s 17	18 ^m 834	4 29 37 ^s 4	111 ^m 63
24	0 7 31 ^s 21	19 ^m 776	S. 4 33 50 ^s 0	117 ^m 12	24	1 39 34 ^s 16	18 ^m 829	N. 4 40 46 ^s 3	111 ^m 35

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 9.					FRIDAY 11.				
0	1 39 34 ^{h m s} 16	18 ^s 829	N. 4 40 46 ^{o ' ' "} 3	111 ^{''} 35	0	3 10 27 ^{h m s} 05	19 ^s 232	N. 12 53 15 ^{o ' ' "} 7	91 ^{''} 69
1	1 41 27 ^{h m s} 12	18 ^s 825	4 51 53 ^{o ' ' "} 6	111 ^{''} 08	1	3 12 22 ^{h m s} 50	19 ^s 251	13 2 24 ^{o ' ' "} 2	91 ^{''} 14
2	1 43 20 ^{h m s} 06	18 ^s 822	5 2 59 ^{o ' ' "} 2	110 ^{''} 79	2	3 14 18 ^{h m s} 06	19 ^s 271	13 11 29 ^{o ' ' "} 4	90 ^{''} 58
3	1 45 12 ^{h m s} 08	18 ^s 818	5 14 3 ^{o ' ' "} 1	110 ^{''} 50	3	3 16 13 ^{h m s} 75	19 ^s 292	13 20 31 ^{o ' ' "} 2	90 ^{''} 03
4	1 47 5 ^{h m s} 88	18 ^s 816	5 25 5 ^{o ' ' "} 2	110 ^{''} 21	4	3 18 9 ^{h m s} 56	19 ^s 312	13 29 29 ^{o ' ' "} 7	89 ^{''} 47
5	1 48 58 ^{h m s} 77	18 ^s 814	5 36 5 ^{o ' ' "} 6	109 ^{''} 92	5	3 20 5 ^{h m s} 49	19 ^s 333	13 38 24 ^{o ' ' "} 8	88 ^{''} 89
6	1 50 51 ^{h m s} 65	18 ^s 813	5 47 4 ^{o ' ' "} 2	109 ^{''} 61	6	3 22 1 ^{h m s} 56	19 ^s 355	13 47 16 ^{o ' ' "} 4	88 ^{''} 32
7	1 52 44 ^{h m s} 52	18 ^s 812	5 58 0 ^{o ' ' "} 9	109 ^{''} 29	7	3 23 57 ^{h m s} 75	19 ^s 377	13 56 4 ^{o ' ' "} 6	87 ^{''} 73
8	1 54 37 ^{h m s} 39	18 ^s 812	6 8 55 ^{o ' ' "} 7	108 ^{''} 98	8	3 25 54 ^{h m s} 08	19 ^s 399	14 4 49 ^{o ' ' "} 2	87 ^{''} 14
9	1 56 30 ^{h m s} 27	18 ^s 813	6 19 48 ^{o ' ' "} 6	108 ^{''} 65	9	3 27 50 ^{h m s} 54	19 ^s 422	14 13 30 ^{o ' ' "} 3	86 ^{''} 55
10	1 58 23 ^{h m s} 15	18 ^s 813	6 30 39 ^{o ' ' "} 5	108 ^{''} 33	10	3 29 47 ^{h m s} 14	19 ^s 445	14 22 7 ^{o ' ' "} 8	85 ^{''} 95
11	2 0 16 ^{h m s} 03	18 ^s 815	6 41 28 ^{o ' ' "} 5	107 ^{''} 99	11	3 31 43 ^{h m s} 88	19 ^s 468	14 30 41 ^{o ' ' "} 7	85 ^{''} 34
12	2 2 8 ^{h m s} 93	18 ^s 818	6 52 15 ^{o ' ' "} 4	107 ^{''} 65	12	3 33 40 ^{h m s} 75	19 ^s 491	14 39 11 ^{o ' ' "} 9	84 ^{''} 73
13	2 4 1 ^{h m s} 84	18 ^s 820	7 3 0 ^{o ' ' "} 3	107 ^{''} 31	13	3 35 37 ^{h m s} 77	19 ^s 515	14 47 38 ^{o ' ' "} 4	84 ^{''} 11
14	2 5 54 ^{h m s} 77	18 ^s 823	7 13 43 ^{o ' ' "} 1	106 ^{''} 96	14	3 37 34 ^{h m s} 93	19 ^s 538	14 56 1 ^{o ' ' "} 2	83 ^{''} 49
15	2 7 47 ^{h m s} 72	18 ^s 828	7 24 23 ^{o ' ' "} 8	106 ^{''} 60	15	3 39 32 ^{h m s} 23	19 ^s 563	15 4 20 ^{o ' ' "} 3	82 ^{''} 87
16	2 9 40 ^{h m s} 70	18 ^s 832	7 35 2 ^{o ' ' "} 3	106 ^{''} 24	16	3 41 29 ^{h m s} 69	19 ^s 588	15 12 35 ^{o ' ' "} 6	82 ^{''} 23
17	2 11 33 ^{h m s} 70	18 ^s 837	7 45 38 ^{o ' ' "} 7	105 ^{''} 88	17	3 43 27 ^{h m s} 29	19 ^s 613	15 20 47 ^{o ' ' "} 0	81 ^{''} 58
18	2 13 26 ^{h m s} 74	18 ^s 843	7 56 12 ^{o ' ' "} 8	105 ^{''} 50	18	3 45 25 ^{h m s} 04	19 ^s 638	15 28 54 ^{o ' ' "} 6	80 ^{''} 93
19	2 15 19 ^{h m s} 81	18 ^s 848	8 6 44 ^{o ' ' "} 7	105 ^{''} 12	19	3 47 22 ^{h m s} 95	19 ^s 664	15 36 58 ^{o ' ' "} 2	80 ^{''} 28
20	2 17 12 ^{h m s} 91	18 ^s 854	8 17 14 ^{o ' ' "} 3	104 ^{''} 73	20	3 49 21 ^{h m s} 01	19 ^s 689	15 44 57 ^{o ' ' "} 9	79 ^{''} 63
21	2 19 6 ^{h m s} 06	18 ^s 862	8 27 41 ^{o ' ' "} 5	104 ^{''} 34	21	3 51 19 ^{h m s} 22	19 ^s 716	15 52 53 ^{o ' ' "} 7	78 ^{''} 96
22	2 20 59 ^{h m s} 25	18 ^s 869	8 38 6 ^{o ' ' "} 4	103 ^{''} 95	22	3 53 17 ^{h m s} 60	19 ^s 743	16 0 45 ^{o ' ' "} 4	78 ^{''} 28
23	2 22 52 ^{h m s} 49	18 ^s 877	N. 8 48 28 ^{o ' ' "} 9	103 ^{''} 54	23	3 55 16 ^{h m s} 13	19 ^s 768	N. 16 8 33 ^{o ' ' "} 1	77 ^{''} 61
THURSDAY 10.					SATURDAY 12.				
0	2 24 45 ^{h m s} 77	18 ^s 885	N. 8 58 48 ^{o ' ' "} 9	103 ^{''} 13	0	3 57 14 ^{h m s} 81	19 ^s 794	N. 16 16 16 ^{o ' ' "} 7	76 ^{''} 93
1	2 26 39 ^{h m s} 11	18 ^s 894	9 9 6 ^{o ' ' "} 5	102 ^{''} 73	1	3 59 13 ^{h m s} 66	19 ^s 822	16 23 56 ^{o ' ' "} 2	76 ^{''} 23
2	2 28 32 ^{h m s} 50	18 ^s 903	9 19 21 ^{o ' ' "} 6	102 ^{''} 31	2	4 1 12 ^{h m s} 67	19 ^s 848	16 31 31 ^{o ' ' "} 5	75 ^{''} 54
3	2 30 25 ^{h m s} 95	18 ^s 914	9 29 34 ^{o ' ' "} 2	101 ^{''} 89	3	4 3 11 ^{h m s} 84	19 ^s 876	16 39 2 ^{o ' ' "} 7	74 ^{''} 84
4	2 32 19 ^{h m s} 47	18 ^s 925	9 39 44 ^{o ' ' "} 3	101 ^{''} 46	4	4 5 11 ^{h m s} 18	19 ^s 903	16 46 29 ^{o ' ' "} 6	74 ^{''} 13
5	2 34 13 ^{h m s} 05	18 ^s 936	9 49 51 ^{o ' ' "} 7	101 ^{''} 02	5	4 7 10 ^{h m s} 68	19 ^s 931	16 53 52 ^{o ' ' "} 2	73 ^{''} 42
6	2 36 6 ^{h m s} 70	18 ^s 947	9 59 56 ^{o ' ' "} 5	100 ^{''} 58	6	4 9 10 ^{h m s} 35	19 ^s 958	17 1 10 ^{o ' ' "} 6	72 ^{''} 70
7	2 38 0 ^{h m s} 41	18 ^s 958	10 9 58 ^{o ' ' "} 6	100 ^{''} 13	7	4 11 10 ^{h m s} 18	19 ^s 986	17 8 24 ^{o ' ' "} 6	71 ^{''} 97
8	2 39 54 ^{h m s} 20	18 ^s 972	10 19 58 ^{o ' ' "} 1	99 ^{''} 68	8	4 13 10 ^{h m s} 18	20 ^s 014	17 15 34 ^{o ' ' "} 2	71 ^{''} 24
9	2 41 48 ^{h m s} 07	18 ^s 985	10 29 54 ^{o ' ' "} 8	99 ^{''} 23	9	4 15 10 ^{h m s} 35	20 ^s 043	17 22 39 ^{o ' ' "} 5	70 ^{''} 51
10	2 43 42 ^{h m s} 02	18 ^s 998	10 39 48 ^{o ' ' "} 8	98 ^{''} 76	10	4 17 10 ^{h m s} 69	20 ^s 071	17 29 40 ^{o ' ' "} 3	69 ^{''} 76
11	2 45 36 ^{h m s} 05	19 ^s 012	10 49 39 ^{o ' ' "} 9	98 ^{''} 29	11	4 19 11 ^{h m s} 20	20 ^s 100	17 36 36 ^{o ' ' "} 6	69 ^{''} 01
12	2 47 30 ^{h m s} 16	19 ^s 026	10 59 28 ^{o ' ' "} 3	97 ^{''} 82	12	4 21 11 ^{h m s} 89	20 ^s 129	17 43 28 ^{o ' ' "} 4	68 ^{''} 26
13	2 49 24 ^{h m s} 36	19 ^s 041	11 9 13 ^{o ' ' "} 8	97 ^{''} 34	13	4 23 12 ^{h m s} 75	20 ^s 157	17 50 15 ^{o ' ' "} 7	67 ^{''} 49
14	2 51 18 ^{h m s} 65	19 ^s 056	11 18 56 ^{o ' ' "} 4	96 ^{''} 85	14	4 25 13 ^{h m s} 77	20 ^s 185	17 56 58 ^{o ' ' "} 3	66 ^{''} 73
15	2 53 13 ^{h m s} 03	19 ^s 072	11 28 36 ^{o ' ' "} 0	96 ^{''} 36	15	4 27 14 ^{h m s} 97	20 ^s 215	18 3 36 ^{o ' ' "} 4	65 ^{''} 96
16	2 55 7 ^{h m s} 51	19 ^s 088	11 38 12 ^{o ' ' "} 7	95 ^{''} 87	16	4 29 16 ^{h m s} 35	20 ^s 244	18 10 9 ^{o ' ' "} 8	65 ^{''} 18
17	2 57 2 ^{h m s} 08	19 ^s 103	11 47 46 ^{o ' ' "} 4	95 ^{''} 37	17	4 31 17 ^{h m s} 90	20 ^s 273	18 16 38 ^{o ' ' "} 5	64 ^{''} 39
18	2 58 56 ^{h m s} 75	19 ^s 121	11 57 17 ^{o ' ' "} 1	94 ^{''} 87	18	4 33 19 ^{h m s} 62	20 ^s 302	18 23 2 ^{o ' ' "} 5	63 ^{''} 60
19	3 0 51 ^{h m s} 53	19 ^s 139	12 6 44 ^{o ' ' "} 8	94 ^{''} 35	19	4 35 21 ^{h m s} 52	20 ^s 331	18 29 21 ^{o ' ' "} 7	62 ^{''} 80
20	3 2 46 ^{h m s} 42	19 ^s 157	12 16 9 ^{o ' ' "} 3	93 ^{''} 83	20	4 37 23 ^{h m s} 59	20 ^s 360	18 35 36 ^{o ' ' "} 1	61 ^{''} 99
21	3 4 41 ^{h m s} 41	19 ^s 174	12 25 30 ^{o ' ' "} 7	93 ^{''} 30	21	4 39 25 ^{h m s} 84	20 ^s 389	18 41 45 ^{o ' ' "} 6	61 ^{''} 18
22	3 6 36 ^{h m s} 51	19 ^s 193	12 34 48 ^{o ' ' "} 9	92 ^{''} 77	22	4 41 28 ^{h m s} 26	20 ^s 418	18 47 50 ^{o ' ' "} 3	60 ^{''} 37
23	3 8 31 ^{h m s} 72	19 ^s 212	12 44 3 ^{o ' ' "} 9	92 ^{''} 23	23	4 43 30 ^{h m s} 85	20 ^s 447	18 53 50 ^{o ' ' "} 0	59 ^{''} 54
24	3 10 27 ^{h m s} 05	19 ^s 232	N. 12 53 15 ^{o ' ' "} 7	91 ^{''} 69	24	4 45 33 ^{h m s} 62	20 ^s 477	N. 18 59 44 ^{o ' ' "} 8	58 ^{''} 73

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 13.					TUESDAY 15.				
0	4 45 33.62	20.477	N.18 59 44.8	58.73	0	6 26 59.25	21.692	N.21 55 55.5	12.82
1	4 47 36.57	20.506	19 5 34.7	57.89	1	6 29 9.46	21.710	21 57 9.2	11.76
2	4 49 39.69	20.535	19 11 19.5	57.05	2	6 31 19.77	21.727	21 58 16.6	10.69
3	4 51 42.99	20.565	19 16 59.3	56.20	3	6 33 30.18	21.743	21 59 17.5	9.62
4	4 53 46.47	20.594	19 22 33.9	55.35	4	6 35 40.69	21.760	22 0 12.0	8.55
5	4 55 50.12	20.623	19 28 3.5	54.50	5	6 37 51.30	21.776	22 1 0.1	7.48
6	4 57 53.95	20.653	19 33 27.9	53.64	6	6 40 2.00	21.791	22 1 41.7	6.40
7	4 59 57.95	20.681	19 38 47.2	52.78	7	6 42 12.79	21.805	22 2 16.9	5.33
8	5 2 2.12	20.710	19 44 1.2	51.90	8	6 44 23.66	21.819	22 2 45.6	4.24
9	5 4 6.47	20.739	19 49 10.0	51.02	9	6 46 34.62	21.834	22 3 7.8	3.16
10	5 6 10.99	20.768	19 54 13.4	50.13	10	6 48 45.67	21.848	22 3 23.5	2.07
11	5 8 15.68	20.796	19 59 11.5	49.24	11	6 50 56.79	21.860	22 3 32.6	0.98
12	5 10 20.54	20.824	20 4 4.3	48.35	12	6 53 7.99	21.873	22 3 35.2	0.11
13	5 12 25.57	20.853	20 8 51.7	47.44	13	6 55 19.26	21.884	22 3 31.3	1.20
14	5 14 30.78	20.882	20 13 33.6	46.53	14	6 57 30.60	21.896	22 3 20.8	2.29
15	5 16 36.15	20.909	20 18 10.1	45.63	15	6 59 42.01	21.908	22 3 3.8	3.38
16	5 18 41.69	20.937	20 22 41.1	44.71	16	7 1 53.49	21.918	22 2 40.2	4.48
17	5 20 47.37	20.964	20 27 6.6	43.79	17	7 4 5.02	21.927	22 2 10.0	5.58
18	5 22 53.26	20.993	20 31 26.6	42.86	18	7 6 16.61	21.937	22 1 33.2	6.68
19	5 24 59.30	21.021	20 35 40.9	41.92	19	7 8 28.26	21.946	22 0 49.8	7.78
20	5 27 5.51	21.048	20 39 49.6	40.98	20	7 10 39.96	21.954	21 59 59.8	8.88
21	5 29 11.87	21.074	20 43 52.7	40.04	21	7 12 51.71	21.962	21 59 3.3	9.98
22	5 31 18.40	21.101	20 47 50.1	39.09	22	7 15 3.50	21.969	21 58 0.1	11.08
23	5 33 25.08	21.128	N.20 51 41.8	38.13	23	7 17 15.34	21.977	N.21 56 50.3	12.19
MONDAY 14.					WEDNESDAY 16.				
0	5 35 31.93	21.154	N.20 55 27.7	37.18	0	7 19 27.22	21.983	N.21 55 33.8	13.30
1	5 37 38.93	21.180	20 59 7.9	36.22	1	7 21 39.14	21.989	21 54 10.7	14.40
2	5 39 46.09	21.206	21 2 42.3	35.24	2	7 23 51.09	21.994	21 52 41.0	15.50
3	5 41 53.40	21.232	21 6 10.8	34.27	3	7 26 3.07	21.999	21 51 4.7	16.60
4	5 44 0.87	21.257	21 9 33.5	33.29	4	7 28 15.08	22.003	21 49 21.8	17.71
5	5 46 8.48	21.282	21 12 50.3	32.31	5	7 30 27.11	22.007	21 47 32.2	18.82
6	5 48 16.25	21.307	21 16 1.2	31.32	6	7 32 39.16	22.010	21 45 36.0	19.92
7	5 50 24.16	21.330	21 19 6.1	30.33	7	7 34 51.23	22.013	21 43 33.2	21.02
8	5 52 32.21	21.354	21 22 5.1	29.33	8	7 37 3.32	22.015	21 41 23.8	22.13
9	5 54 40.41	21.379	21 24 58.0	28.32	9	7 39 15.41	22.017	21 39 7.7	23.23
10	5 56 48.76	21.403	21 27 44.9	27.32	10	7 41 27.52	22.019	21 36 45.0	24.33
11	5 58 57.24	21.425	21 30 25.8	26.31	11	7 43 39.64	22.019	21 34 15.8	25.43
12	6 1 5.86	21.448	21 33 0.6	25.29	12	7 45 51.75	22.019	21 31 39.9	26.53
13	6 3 14.62	21.471	21 35 29.3	24.28	13	7 48 3.87	22.019	21 28 57.4	27.63
14	6 5 23.51	21.493	21 37 51.9	23.25	14	7 50 15.98	22.018	21 26 8.4	28.73
15	6 7 32.53	21.514	21 40 8.3	22.22	15	7 52 28.09	22.017	21 23 12.7	29.83
16	6 9 41.68	21.536	21 42 18.5	21.18	16	7 54 40.18	22.015	21 20 10.4	30.93
17	6 11 50.96	21.557	21 44 22.5	20.15	17	7 56 52.27	22.013	21 17 1.6	32.01
18	6 14 0.36	21.578	21 46 20.3	19.12	18	7 59 4.34	22.011	21 13 46.3	33.10
19	6 16 9.89	21.598	21 48 11.9	18.08	19	8 1 16.40	22.008	21 10 24.4	34.20
20	6 18 19.53	21.617	21 49 57.2	17.03	20	8 3 28.43	22.003	21 6 55.9	35.29
21	6 20 29.29	21.637	21 51 36.3	15.98	21	8 5 40.44	21.999	21 3 20.9	36.37
22	6 22 39.17	21.656	21 53 9.0	14.93	22	8 7 52.42	21.995	20 59 39.5	37.45
23	6 24 49.16	21.673	21 54 35.4	13.88	23	8 10 4.33	21.990	20 55 51.5	38.54
24	6 26 59.25	21.692	N.21 55 55.5	12.82	24	8 12 16.30	21.984	N.20 51 57.0	39.62

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 17.					SATURDAY 19.				
0	^h 8 ^m 12 ^s 16 ³⁰	21 ⁸⁸⁴	N. 20 51 57 ⁰	39 ⁶²	0	^h 9 ^m 56 ^s 30 ⁴⁷	21 ³⁵⁷	N. 15 44 47 ⁴	86 ⁴²
1	8 14 28 ¹⁹	21 ⁹⁷⁸	20 47 56 ¹	40 ⁶⁹	1	9 58 38 ⁵⁶	21 ³⁴¹	15 36 6 ⁴	87 ²⁴
2	8 16 40 ⁰⁴	21 ⁹⁷²	20 43 48 ⁷	41 ⁷⁷	2	10 04 46 ⁵⁶	21 ³⁴⁴	15 27 20 ⁵	88 ⁰⁶
3	8 18 51 ⁸⁵	21 ⁹⁶⁵	20 39 34 ⁹	42 ⁸⁴	3	10 2 54 ⁴⁵	21 ³⁰⁸	15 18 29 ⁷	88 ⁸⁸
4	8 21 3 ⁶²	21 ⁹⁵⁸	20 35 14 ⁶	43 ⁹¹	4	10 5 2 ²⁵	21 ²⁹¹	15 9 33 ⁹	89 ⁷⁰
5	8 23 15 ³⁵	21 ⁹⁵¹	20 30 48 ⁰	44 ⁹⁷	5	10 7 9 ⁹⁴	21 ²⁷⁴	15 0 33 ³	90 ⁴⁹
6	8 25 27 ⁰³	21 ⁹⁴³	20 26 15 ⁰	46 ⁰³	6	10 9 17 ⁵⁴	21 ²⁵⁸	14 51 28 ⁰	91 ²⁸
7	8 27 38 ⁶⁶	21 ⁹³⁴	20 21 35 ⁶	47 ¹⁰	7	10 11 25 ⁰⁴	21 ²⁴²	14 42 17 ⁹	92 ⁰⁸
8	8 29 50 ²⁴	21 ⁹²⁵	20 16 49 ⁸	48 ¹⁵	8	10 13 32 ⁴⁴	21 ²²⁵	14 33 3 ⁰	92 ⁸⁷
9	8 32 1 ⁷⁶	21 ⁹¹⁶	20 11 57 ⁸	49 ²⁰	9	10 15 39 ⁷⁴	21 ²⁰⁹	14 23 43 ⁵	93 ⁶³
10	8 34 13 ²³	21 ⁹⁰⁷	20 6 59 ⁴	50 ²⁵	10	10 17 46 ⁹⁵	21 ¹⁹³	14 14 19 ⁵	94 ³⁹
11	8 36 24 ⁶⁴	21 ⁸⁹⁷	20 1 54 ⁸	51 ²⁸	11	10 19 54 ⁰⁶	21 ¹⁷⁷	14 4 50 ⁸	95 ¹⁶
12	8 38 35 ⁹⁹	21 ⁸⁸⁷	19 56 44 ⁰	52 ³³	12	10 22 1 ⁰⁷	21 ¹⁶¹	13 55 17 ⁶	95 ⁹⁰
13	8 40 47 ²⁸	21 ⁸⁷⁶	19 51 26 ⁹	53 ³⁷	13	10 24 7 ⁹⁹	21 ¹⁴⁶	13 45 40 ⁰	96 ⁶⁴
14	8 42 58 ⁵⁰	21 ⁸⁶⁵	19 46 3 ⁶	54 ⁴⁰	14	10 26 14 ⁸²	21 ¹³⁰	13 35 57 ⁹	97 ³⁸
15	8 45 9 ⁶⁶	21 ⁸⁵⁴	19 40 34 ¹	55 ⁴³	15	10 28 21 ⁵⁵	21 ¹¹⁵	13 26 11 ⁴	98 ¹¹
16	8 47 20 ⁷⁵	21 ⁸⁴²	19 34 58 ⁴	56 ⁴⁵	16	10 30 28 ²⁰	21 ¹⁰⁰	13 16 20 ⁶	98 ⁸³
17	8 49 31 ⁷⁶	21 ⁸³⁰	19 29 16 ⁷	57 ⁴⁷	17	10 32 34 ⁷⁵	21 ⁰⁸⁴	13 6 25 ⁵	99 ⁵⁴
18	8 51 42 ⁷¹	21 ⁸¹⁸	19 23 28 ⁸	58 ⁴⁹	18	10 34 41 ²¹	21 ⁰⁷⁰	12 56 26 ¹	100 ²⁴
19	8 53 53 ⁵⁸	21 ⁸⁰⁶	19 17 34 ⁸	59 ⁵¹	19	10 36 47 ⁵⁹	21 ⁰⁵⁵	12 46 22 ⁶	100 ⁹³
20	8 56 4 ³⁸	21 ⁷⁹³	19 11 34 ⁷	60 ⁵¹	20	10 38 53 ⁸⁷	21 ⁰⁴⁰	12 36 14 ⁹	101 ⁶²
21	8 58 15 ⁰⁹	21 ⁷⁷⁹	19 5 28 ⁷	61 ⁵¹	21	10 41 0 ⁰⁷	21 ⁰²⁷	12 26 3 ¹	102 ³⁰
22	9 0 25 ⁷³	21 ⁷⁶⁷	18 59 16 ⁶	62 ⁵¹	22	10 43 6 ¹⁹	21 ⁰¹³	12 15 47 ³	102 ⁹⁷
23	9 2 36 ²⁹	21 ⁷⁵³	N. 18 52 58 ⁶	63 ⁵⁰	23	10 45 12 ²²	20 ⁹⁹⁸	N. 12 5 57 ⁵	103 ⁶³
FRIDAY 18.					SUNDAY 20.				
0	9 4 46 ⁷⁶	21 ⁷³⁸	N. 18 46 34 ⁶	64 ⁴⁹	0	10 47 18 ¹⁷	20 ⁹⁸⁵	N. 11 55 3 ⁷	104 ²⁹
1	9 6 57 ¹⁵	21 ⁷²⁵	18 40 4 ⁷	65 ⁴⁷	1	10 49 24 ⁰⁴	20 ⁹⁷²	11 44 36 ⁰	104 ⁹³
2	9 9 7 ⁴⁶	21 ⁷¹⁰	18 33 29 ⁰	66 ⁴³	2	10 51 29 ⁸³	20 ⁹⁵⁸	11 34 4 ⁵	105 ⁵⁸
3	9 11 17 ⁶⁷	21 ⁶⁹⁵	18 26 47 ⁵	67 ⁴¹	3	10 53 35 ⁵⁴	20 ⁹⁴⁶	11 23 29 ¹	106 ²¹
4	9 13 27 ⁸⁰	21 ⁶⁸¹	18 20 0 ¹	68 ³⁸	4	10 55 41 ¹⁸	20 ⁹³⁴	11 12 50 ⁰	106 ⁸²
5	9 15 37 ⁸⁴	21 ⁶⁶⁶	18 13 7 ⁰	69 ³³	5	10 57 46 ⁷⁵	20 ⁹²²	11 2 7 ³	107 ⁴³
6	9 17 47 ⁷⁹	21 ⁶⁵¹	18 6 8 ¹	70 ²⁹	6	10 59 52 ²⁴	20 ⁹⁰⁹	10 51 20 ⁸	108 ⁰⁴
7	9 19 57 ⁶⁵	21 ⁶³⁵	17 59 3 ⁵	71 ²⁴	7	11 1 57 ⁶⁶	20 ⁸⁹⁸	10 40 30 ⁸	108 ⁶³
8	9 22 7 ⁴¹	21 ⁶¹⁹	17 51 53 ²	72 ¹⁸	8	11 4 3 ⁰²	20 ⁸⁸⁸	10 29 37 ²	109 ²³
9	9 24 17 ⁰⁸	21 ⁶⁰⁴	17 44 37 ³	73 ¹²	9	11 6 8 ³¹	20 ⁸⁷⁶	10 18 40 ¹	109 ⁸¹
10	9 26 26 ⁶⁶	21 ⁵⁸⁸	17 37 15 ⁸	74 ⁰⁵	10	11 8 13 ⁵³	20 ⁸⁶⁵	10 7 39 ⁵	110 ³⁸
11	9 28 36 ¹⁴	21 ⁵⁷²	17 29 48 ⁷	74 ⁹⁸	11	11 10 18 ⁶⁹	20 ⁸⁵⁵	9 56 35 ⁶	110 ⁹³
12	9 30 45 ⁵²	21 ⁵⁵⁶	17 22 16 ¹	75 ⁸⁹	12	11 12 23 ⁷⁹	20 ⁸⁴⁵	9 45 28 ³	111 ⁴⁸
13	9 32 54 ⁸¹	21 ⁵⁴⁰	17 14 38 ⁰	76 ⁸¹	13	11 14 28 ⁸³	20 ⁸³⁶	9 34 17 ⁸	112 ⁰³
14	9 35 4 ⁰⁰	21 ⁵²⁴	17 6 54 ⁴	77 ⁷¹	14	11 16 33 ⁸²	20 ⁸²⁸	9 23 4 ⁰	112 ⁵⁷
15	9 37 13 ¹⁰	21 ⁵⁰⁸	16 59 5 ⁵	78 ⁶¹	15	11 18 38 ⁷⁶	20 ⁸¹⁸	9 11 47 ⁰	113 ⁰⁹
16	9 39 22 ⁰⁹	21 ⁴⁹¹	16 51 11 ¹	79 ⁵¹	16	11 20 43 ⁶⁴	20 ⁸⁰⁹	9 0 26 ⁹	113 ⁶¹
17	9 41 30 ⁹⁹	21 ⁴⁷⁴	16 43 11 ⁴	80 ³⁹	17	11 22 48 ⁴⁷	20 ⁸⁰²	8 49 3 ⁷	114 ¹²
18	9 43 39 ⁷⁸	21 ⁴⁵⁸	16 35 6 ⁴	81 ²⁷	18	11 24 53 ²⁶	20 ⁷⁹⁴	8 37 37 ⁵	114 ⁶²
19	9 45 48 ⁴⁸	21 ⁴⁴²	16 26 56 ²	82 ¹⁴	19	11 26 58 ⁰⁰	20 ⁷⁸⁷	8 26 8 ³	115 ¹¹
20	9 47 57 ⁰⁸	21 ⁴²⁵	16 18 40 ⁷	83 ⁰¹	20	11 29 2 ⁷⁰	20 ⁷⁸⁰	8 14 36 ²	115 ⁵⁹
21	9 50 5 ⁵⁸	21 ⁴⁰⁸	16 10 20 ¹	83 ⁸⁷	21	11 31 7 ³⁶	20 ⁷⁷³	8 3 ¹ 2	116 ⁰⁷
22	9 52 13 ⁹⁸	21 ³⁹²	16 1 54 ³	84 ⁷³	22	11 33 11 ⁹⁸	20 ⁷⁶⁸	7 51 23 ⁴	116 ⁵³
23	9 54 22 ²⁸	21 ³⁷⁴	15 53 23 ⁴	85 ⁵⁸	23	11 35 16 ⁵⁷	20 ⁷⁶³	7 39 42 ⁹	116 ⁹⁸
24	9 56 30 ⁴⁷	21 ³⁵⁷	N. 15 44 47 ⁴	86 ⁴²	24	11 37 21 ¹³	20 ⁷⁵⁸	N. 7 27 59 ⁶	117 ⁴³

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 21.					WEDNESDAY 23.				
0	11 37 21.13	20.758	N. 7 27 59.6	117.43	0	13 17 22.15	21.133	S. 2 29 6.8	127.55
1	11 39 25.66	20.753	7 16 13.7	117.87	1	13 19 29.02	21.156	2 41 52.0	127.52
2	11 41 30.16	20.748	7 4 25.2	118.29	2	13 21 36.02	21.178	2 54 37.0	127.47
3	11 43 34.63	20.744	6 52 34.2	118.71	3	13 23 43.16	21.202	3 7 21.6	127.40
4	11 45 39.09	20.742	6 40 40.7	119.13	4	13 25 50.44	21.226	3 20 5.8	127.33
5	11 47 43.53	20.738	6 28 44.7	119.53	5	13 27 57.87	21.251	3 32 49.5	127.24
6	11 49 47.95	20.736	6 16 46.4	119.91	6	13 30 5.45	21.277	3 45 32.7	127.15
7	11 51 52.36	20.734	6 4 45.8	120.29	7	13 32 13.19	21.303	3 58 15.3	127.04
8	11 53 56.76	20.733	5 52 42.9	120.67	8	13 34 21.08	21.328	4 10 57.2	126.92
9	11 56 1.15	20.732	5 40 37.8	121.03	9	13 36 29.13	21.356	4 23 38.3	126.78
10	11 58 5.54	20.732	5 28 30.5	121.39	10	13 38 37.35	21.384	4 36 18.6	126.65
11	12 0 9.93	20.733	5 16 21.1	121.73	11	13 40 45.74	21.412	4 48 58.1	126.50
12	12 2 14.33	20.733	5 4 9.7	122.07	12	13 42 54.29	21.440	5 1 36.6	126.33
13	12 4 18.73	20.734	4 51 56.3	122.39	13	13 45 3.02	21.471	5 14 14.1	126.15
14	12 6 23.14	20.736	4 39 41.0	122.71	14	13 47 11.94	21.502	5 26 50.4	125.96
15	12 8 27.56	20.738	4 27 23.8	123.02	15	13 49 21.04	21.532	5 39 25.6	125.76
16	12 10 31.99	20.740	4 15 4.8	123.32	16	13 51 30.32	21.563	5 51 59.5	125.55
17	12 12 36.44	20.744	4 2 44.0	123.60	17	13 53 39.80	21.596	6 4 32.2	125.32
18	12 14 40.92	20.748	3 50 21.6	123.88	18	13 55 49.47	21.628	6 17 3.4	125.08
19	12 16 45.42	20.753	3 37 57.5	124.15	19	13 57 59.33	21.661	6 29 33.2	124.84
20	12 18 49.95	20.758	3 25 31.8	124.42	20	14 0 9.40	21.696	6 42 1.5	124.58
21	12 20 54.51	20.763	3 13 4.5	124.67	21	14 2 19.68	21.731	6 54 28.2	124.31
22	12 22 59.10	20.768	3 0 35.8	124.90	22	14 4 30.17	21.765	7 6 53.2	124.03
23	12 25 3.73	20.776	N. 2 48 5.7	125.13	23	14 6 40.86	21.801	7 19 16.5	123.73
TUESDAY 22.					THURSDAY 24.				
0	12 27 8.41	20.783	N. 2 35 34.3	125.34	0	14 8 51.78	21.838	S. 7 31 38.0	123.43
1	12 29 13.13	20.791	2 23 1.6	125.56	1	14 11 2.91	21.874	7 43 57.6	123.10
2	12 31 17.90	20.798	2 10 27.6	125.76	2	14 13 14.27	21.912	7 56 15.2	122.76
3	12 33 22.71	20.808	1 57 52.5	125.94	3	14 15 25.85	21.949	8 8 30.7	122.41
4	12 35 27.59	20.818	1 45 16.3	126.12	4	14 17 37.66	21.988	8 20 44.1	122.05
5	12 37 32.52	20.827	1 32 39.0	126.29	5	14 19 49.70	22.027	8 32 55.3	121.68
6	12 39 37.51	20.838	1 20 0.8	126.45	6	14 22 1.98	22.066	8 45 4.3	121.30
7	12 41 42.57	20.849	1 7 21.6	126.61	7	14 24 14.49	22.106	8 57 10.9	120.90
8	12 43 47.70	20.861	0 54 41.5	126.75	8	14 26 27.25	22.148	9 9 15.1	120.48
9	12 45 52.90	20.873	0 42 0.6	126.88	9	14 28 40.26	22.188	9 21 16.7	120.06
10	12 47 58.18	20.887	0 29 19.0	126.99	10	14 30 53.51	22.229	9 33 15.8	119.63
11	12 50 3.54	20.900	0 16 36.7	127.10	11	14 33 7.01	22.272	9 45 12.2	119.17
12	12 52 8.98	20.914	N. 0 3 53.8	127.20	12	14 35 20.77	22.315	9 57 5.8	118.70
13	12 54 14.51	20.929	S. 0 8 49.7	127.29	13	14 37 34.79	22.358	10 8 56.6	118.23
14	12 56 20.13	20.945	0 21 33.7	127.37	14	14 39 49.06	22.401	10 20 44.6	117.74
15	12 58 25.85	20.961	0 34 18.1	127.43	15	14 42 3.60	22.446	10 32 29.5	117.23
16	13 0 31.66	20.978	0 47 2.8	127.48	16	14 44 18.41	22.490	10 44 11.4	116.72
17	13 2 37.58	20.995	0 59 47.9	127.54	17	14 46 33.48	22.535	10 55 50.2	116.19
18	13 4 43.60	21.013	1 12 33.3	127.58	18	14 48 48.83	22.581	11 7 25.7	115.64
19	13 6 49.73	21.031	1 25 18.8	127.59	19	14 51 4.45	22.627	11 18 57.9	115.08
20	13 8 55.97	21.050	1 38 4.4	127.61	20	14 53 20.35	22.673	11 30 26.7	114.52
21	13 11 2.33	21.070	1 50 50.1	127.62	21	14 55 36.53	22.720	11 41 52.1	113.93
22	13 13 8.81	21.091	2 3 35.8	127.61	22	14 57 52.99	22.767	11 53 13.9	113.33
23	13 15 15.42	21.112	2 16 21.4	127.58	23	15 0 9.73	22.814	12 4 32.1	112.72
24	13 17 22.15	21.133	S. 2 29 6.8	127.55	24	15 2 26.76	22.863	S. 12 15 46.5	112.09

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 25.					SUNDAY 27.				
0	15 2 26.76	22.863	S. 12 15 46.5	112.09	0	16 58 3.10	25.283	S. 19 34 52.0	65.49
1	15 4 44.08	22.911	12 26 57.2	111.46	1	17 0 34.93	25.328	19 41 21.1	64.19
2	15 7 1.69	22.960	12 38 4.0	110.81	2	17 3 7.03	25.371	19 47 42.3	62.88
3	15 9 19.60	23.009	12 49 6.8	110.13	3	17 5 39.38	25.413	19 53 55.6	61.56
4	15 11 37.80	23.058	13 0 5.6	109.45	4	17 8 11.99	25.457	20 0 1.0	60.22
5	15 13 56.30	23.108	13 11 0.2	108.75	5	17 10 44.86	25.498	20 5 58.2	58.87
6	15 16 15.10	23.158	13 21 50.6	108.04	6	17 13 17.97	25.538	20 11 47.4	57.52
7	15 18 34.20	23.208	13 32 36.7	107.33	7	17 15 51.32	25.578	20 17 28.4	56.14
8	15 20 53.60	23.258	13 43 18.5	106.59	8	17 18 24.91	25.618	20 23 1.1	54.76
9	15 23 13.30	23.309	13 53 55.8	105.83	9	17 20 58.74	25.658	20 28 25.5	53.38
10	15 25 33.31	23.361	14 4 28.5	105.06	10	17 23 32.80	25.695	20 33 41.6	51.98
11	15 27 53.63	23.412	14 14 56.5	104.28	11	17 26 7.08	25.731	20 38 49.2	50.57
12	15 30 14.25	23.463	14 25 19.9	103.49	12	17 28 41.57	25.767	20 43 48.4	49.15
13	15 32 35.18	23.514	14 35 38.4	102.68	13	17 31 16.28	25.803	20 48 39.0	47.72
14	15 34 56.42	23.567	14 45 52.0	101.85	14	17 33 51.20	25.837	20 53 21.0	46.28
15	15 37 17.08	23.618	14 56 0.6	101.02	15	17 36 26.32	25.869	20 57 54.3	44.83
16	15 39 39.84	23.670	15 6 4.2	100.17	16	17 39 1.63	25.901	21 2 18.9	43.37
17	15 42 2.02	23.723	15 16 2.6	99.29	17	17 41 37.13	25.933	21 6 34.7	41.90
18	15 44 24.51	23.775	15 25 55.7	98.41	18	17 44 12.82	25.963	21 10 41.7	40.43
19	15 46 47.32	23.828	15 35 43.5	97.52	19	17 46 48.69	25.992	21 14 39.8	38.94
20	15 49 10.44	23.879	15 45 25.9	96.61	20	17 49 24.72	26.019	21 18 29.0	37.46
21	15 51 33.87	23.932	15 55 2.8	95.68	21	17 52 0.92	26.047	21 22 9.3	35.97
22	15 53 57.62	23.985	16 4 34.1	94.75	22	17 54 37.28	26.073	21 25 40.6	34.46
23	15 56 21.69	24.037	S. 16 13 59.8	93.80	23	17 57 13.79	26.097	S. 21 29 2.8	32.94
SATURDAY 26.					MONDAY 28.				
0	15 58 46.06	24.088	S. 16 23 19.7	92.83	0	17 59 50.44	26.120	S. 21 32 15.9	31.43
1	16 1 10.75	24.142	16 32 33.8	91.85	1	18 2 27.23	26.143	21 35 19.9	29.90
2	16 3 35.76	24.195	16 41 41.9	90.85	2	18 5 4.15	26.163	21 38 14.7	28.38
3	16 6 1.09	24.247	16 50 44.0	89.84	3	18 7 41.19	26.183	21 41 0.4	26.84
4	16 8 26.72	24.298	16 59 40.0	88.82	4	18 10 18.35	26.203	21 43 36.8	25.29
5	16 10 52.67	24.351	17 8 29.8	87.78	5	18 12 55.62	26.220	21 46 3.9	23.75
6	16 13 18.93	24.403	17 17 13.4	86.73	6	18 15 32.99	26.236	21 48 21.8	22.20
7	16 15 45.50	24.454	17 25 50.6	85.67	7	18 18 10.45	26.251	21 50 30.3	20.64
8	16 18 12.38	24.506	17 34 21.4	84.58	8	18 20 48.00	26.266	21 52 29.5	19.08
9	16 20 39.57	24.558	17 42 45.6	83.49	9	18 23 25.64	26.278	21 54 19.3	17.52
10	16 23 7.07	24.608	17 51 3.3	82.39	10	18 26 3.34	26.288	21 55 59.7	15.96
11	16 25 34.87	24.658	17 59 14.3	81.27	11	18 28 41.10	26.299	21 57 30.8	14.39
12	16 28 2.97	24.709	18 7 18.5	80.13	12	18 31 18.93	26.308	21 58 52.4	12.82
13	16 30 31.38	24.760	18 15 15.9	78.98	13	18 33 56.80	26.315	22 0 4.6	11.24
14	16 33 0.09	24.809	18 23 6.3	77.82	14	18 36 34.71	26.322	22 1 7.3	9.66
15	16 35 29.09	24.858	18 30 49.7	76.64	15	18 39 12.66	26.326	22 2 0.5	8.08
16	16 37 58.39	24.908	18 38 26.0	75.45	16	18 41 50.62	26.329	22 2 44.3	6.51
17	16 40 27.99	24.957	18 45 55.1	74.25	17	18 44 28.61	26.332	22 3 18.6	4.93
18	16 42 57.87	25.004	18 53 17.0	73.04	18	18 47 6.60	26.332	22 3 43.4	3.34
19	16 45 28.04	25.053	19 0 31.6	71.82	19	18 49 44.59	26.332	22 3 58.7	1.76
20	16 47 58.50	25.099	19 7 38.8	70.58	20	18 52 22.58	26.330	22 4 4.5	0.18
21	16 50 29.23	25.146	19 14 38.5	69.32	21	18 55 0.55	26.327	22 4 0.8	1.40
22	16 53 0.25	25.193	19 21 30.6	68.06	22	18 57 38.50	26.323	22 3 47.7	2.98
23	16 55 31.54	25.238	19 28 15.2	66.78	23	19 0 16.42	26.317	22 3 25.1	4.56
24	16 58 3.10	25.283	S. 19 34 52.0	65.49	24	19 2 54.30	26.309	S. 22 2 53.0	6.14

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 29.					THURSDAY 31.				
0	19 2 54' 30	26' 309	S. 22 2 53' 0	6' 14	0	21 6 2' 06	24' 604	S. 18 42 25' 3	73' 84
1	19 5 32' 13	26' 300	22 2 11' 4	7' 72	1	21 8 29' 52	24' 548	18 34 58' 8	74' 99
2	19 8 9' 90	26' 290	22 1 20' 4	9' 29	2	21 10 56' 64	24' 492	18 27 25' 4	76' 12
3	19 10 47' 61	26' 279	22 0 19' 9	10' 86	3	21 13 23' 42	24' 435	18 19 45' 4	77' 23
4	19 13 25' 25	26' 267	21 59 10' 1	12' 43	4	21 15 49' 86	24' 378	18 11 58' 7	78' 33
5	19 16 2' 81	26' 253	21 57 50' 8	13' 99	5	21 18 15' 96	24' 320	18 4 5' 5	79' 40
6	19 18 40' 28	26' 238	21 56 22' 2	15' 55	6	21 20 41' 70	24' 262	17 56 5' 9	80' 47
7	19 21 17' 66	26' 221	21 54 44' 2	17' 12	7	21 23 7' 10	24' 204	17 47 59' 9	81' 53
8	19 23 54' 93	26' 203	21 52 56' 8	18' 67	8	21 25 32' 15	24' 145	17 39 47' 6	82' 56
9	19 26 32' 09	26' 183	21 51 0' 2	20' 21	9	21 27 56' 84	24' 086	17 31 29' 2	83' 58
10	19 29 9' 13	26' 163	21 48 54' 3	21' 75	10	21 30 21' 18	24' 027	17 23 4' 7	84' 59
11	19 31 46' 05	26' 142	21 46 39' 2	23' 29	11	21 32 45' 16	23' 968	17 14 34' 1	85' 59
12	19 34 22' 83	26' 118	21 44 14' 8	24' 83	12	21 35 8' 79	23' 908	17 5 57' 6	86' 57
13	19 36 59' 47	26' 094	21 41 41' 3	26' 35	13	21 37 32' 06	23' 848	16 57 15' 3	87' 53
14	19 39 35' 96	26' 069	21 38 58' 6	27' 88	14	21 39 54' 97	23' 788	16 48 27' 3	88' 48
15	19 42 12' 30	26' 042	21 36 6' 8	29' 38	15	21 42 17' 51	23' 728	16 39 33' 6	89' 41
16	19 44 48' 47	26' 014	21 33 6' 0	30' 88	16	21 44 39' 70	23' 668	16 30 34' 4	90' 33
17	19 47 24' 47	25' 986	21 29 56' 2	32' 38	17	21 47 1' 52	23' 607	16 21 29' 7	91' 23
18	19 50 0' 30	25' 956	21 26 37' 4	33' 88	18	21 49 22' 98	23' 547	16 12 19' 6	92' 12
19	19 52 35' 94	25' 924	21 23 9' 6	35' 37	19	21 51 44' 08	23' 487	16 3 4' 3	92' 99
20	19 55 11' 39	25' 892	21 19 33' 0	36' 84	20	21 54 4' 82	23' 426	15 53 43' 7	93' 85
21	19 57 46' 64	25' 858	21 15 47' 5	38' 31	21	21 56 25' 19	23' 365	15 44 18' 1	94' 69
22	20 0 21' 69	25' 823	21 11 53' 3	39' 77	22	21 58 45' 20	23' 304	15 34 47' 4	95' 53
23	20 2 56' 52	25' 787	S. 21 7 50' 3	41' 23	23	22 1 4' 84	23' 243	S. 15 25 11' 7	96' 34
WEDNESDAY 30.					FRIDAY, FEB. 1.				
0	20 5 31' 13	25' 750	S. 21 3 38' 6	42' 67	0	22 3 24' 12	23' 183	S. 15 15 31' 3	97' 13
1	20 8 5' 52	25' 713	20 59 18' 3	44' 09					
2	20 10 39' 68	25' 674	20 54 49' 5	45' 51					
3	20 13 13' 61	25' 634	20 50 12' 2	46' 93					
4	20 15 47' 29	25' 593	20 45 26' 4	48' 33					
5	20 18 20' 72	25' 551	20 40 32' 3	49' 71					
6	20 20 53' 90	25' 508	20 35 29' 9	51' 09					
7	20 23 26' 82	25' 464	20 30 19' 2	52' 47					
8	20 25 59' 47	25' 420	20 25 0' 3	53' 83					
9	20 28 31' 86	25' 375	20 19 33' 3	55' 17					
10	20 31 3' 97	25' 328	20 13 58' 3	56' 49					
11	20 33 35' 80	25' 281	20 8 15' 4	57' 82					
12	20 36 7' 34	25' 233	20 2 24' 5	59' 13					
13	20 38 38' 59	25' 184	19 56 25' 8	60' 43					
14	20 41 9' 55	25' 135	19 50 19' 3	61' 72					
15	20 43 40' 21	25' 085	19 44 5' 2	62' 99					
16	20 46 10' 57	25' 034	19 37 43' 4	64' 26					
17	20 48 40' 62	24' 983	19 31 14' 1	65' 50					
18	20 51 10' 36	24' 931	19 24 37' 4	66' 73					
19	20 53 39' 79	24' 878	19 17 53' 3	67' 95					
20	20 56 8' 90	24' 824	19 11 2' 0	69' 16					
21	20 58 37' 68	24' 770	19 4 3' 4	70' 36					
22	21 1 6' 14	24' 716	18 56 57' 7	71' 54					
23	21 3 34' 27	24' 660	18 49 44' 9	72' 70					
24	21 6 2' 06	24' 604	S. 18 42 25' 3	73' 84					
					PHASES OF THE MOON.				
					Jan. 1	● New Moon	- - -	9 7' 8	
					8	☾ First Quarter	- - -	12 40' 6	
					16	○ Full Moon	- - -	17 36' 8	
					24	☾ Last Quarter	- - -	3 57' 3	
					30	● New Moon	- - -	21 9' 9	
					Jan. 12	☾ Apogee	- - - - -	5	
					28	☾ Perigee	- - - - -	7	

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^a .	P.L. of diff.	VI ^a .	P.L. of diff.	IX ^a .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
3	SUN W.	22 11 8	2518	23 51 56	2534	25 32 22	2550	27 12 26	2567
	α Arietis E.	90 47 59	2350	89 3 13	2366	87 18 49	2382	85 34 48	2399
4	SUN W.	35 26 45	2657	37 4 22	2677	38 41 33	2696	40 18 18	2715
	α Arietis E.	77 1 1	2492	75 19 37	2512	73 38 40	2533	71 58 13	2555
	Aldebaran E.	108 6 46	2333	106 21 34	2350	104 36 48	2368	102 52 28	2387
5	SUN W.	48 15 31	2815	49 49 39	2836	51 23 20	2856	52 56 35	2876
	α Arietis E.	63 43 38	2671	62 6 19	2696	60 29 34	2722	58 53 23	2747
	Aldebaran E.	94 17 22	2480	92 35 40	2499	90 54 25	2517	89 13 36	2535
6	SUN W.	60 36 23	2977	62 7 5	2997	63 37 22	3015	65 7 16	3035
	Mars W.	19 37 15	2914	21 9 16	2930	22 40 57	2947	24 12 16	2965
	Venus W.	18 11 15	3047	19 40 30	3065	21 9 23	3082	22 37 54	3101
	α Arietis E.	51 1 22	2891	49 28 51	2921	47 56 59	2954	46 25 49	2989
	Aldebaran E.	80 55 56	2629	79 17 40	2647	77 39 49	2665	76 2 22	2682
7	SUN W.	72 30 54	3127	73 58 31	3145	75 25 46	3161	76 52 42	3178
	Mars W.	31 43 31	3049	33 12 43	3065	34 41 35	3081	36 10 8	3098
	Fomalhaut W.	31 17 54	3623	32 36 4	3568	33 55 13	3522	35 15 13	3482
	Venus W.	29 54 58	3191	31 21 18	3207	32 47 19	3225	34 12 59	3241
	α Arietis E.	39 1 11	3186	37 34 45	3233	36 9 15	3285	34 44 46	3340
	Aldebaran E.	68 0 55	2768	66 25 45	2784	64 50 56	2799	63 16 27	2815
8	SUN W.	84 2 28	3256	85 27 31	3270	86 52 18	3284	88 16 48	3297
	Mars W.	43 28 7	3172	44 54 50	3186	46 21 16	3198	47 47 27	3212
	Fomalhaut W.	42 4 7	3364	43 27 5	3350	44 50 19	3339	46 13 45	3329
	Venus W.	41 16 37	3319	42 40 27	3332	44 4 1	3346	45 27 19	3359
	α Pegasi W.	31 53 12	4751	32 53 29	4612	33 55 43	4490	34 59 44	4384
	Aldebaran E.	55 28 56	2887	53 56 20	2901	52 24 2	2913	50 52 0	2925
	Pollux E.	99 42 29	2913	98 10 27	2927	96 38 42	2939	95 7 12	2950
9	SUN W.	95 15 39	3357	96 38 45	3367	98 1 39	3377	99 24 22	3386
	Mars W.	54 54 41	3269	56 19 29	3279	57 44 5	3289	59 8 29	3298
	Fomalhaut W.	53 13 5	3303	54 37 13	3301	56 1 23	3299	57 25 36	3298
	Venus W.	52 20 11	3419	53 42 6	3430	55 3 49	3439	56 25 21	3449
	α Pegasi W.	40 40 35	4015	41 52 0	3965	43 4 14	3920	44 17 13	3880
	Aldebaran E.	43 15 32	2981	41 44 56	2991	40 14 32	3000	38 44 19	3009
	Pollux E.	87 33 20	3005	86 3 14	3014	84 33 19	3024	83 3 36	3033
10	SUN W.	106 15 28	3426	107 37 15	3432	108 58 55	3438	110 20 29	3443
	Mars W.	66 8 3	3336	67 31 33	3343	68 54 55	3348	70 18 11	3354
	Fomalhaut W.	64 26 57	3294	65 51 15	3295	67 15 32	3294	68 39 50	3294
	Venus W.	63 10 34	3488	64 31 12	3495	65 51 42	3501	67 12 5	3506
	α Pegasi W.	50 31 9	3731	51 47 23	3709	53 4 1	3689	54 21 0	3671
	Aldebaran E.	31 15 54	3048	29 46 41	3055	28 17 36	3061	26 48 39	3068
	Pollux E.	75 37 34	3070	74 8 48	3077	72 40 10	3082	71 11 39	3088
	Saturn E.	102 6 41	3017	100 36 49	3022	99 7 4	3028	97 37 26	3033
11	SUN W.	117 6 58	3463	118 28 4	3465	119 49 7	3467	121 10 8	3469
	Mars W.	77 13 10	3372	78 35 58	3375	79 58 43	3377	81 21 26	3379
	Fomalhaut W.	75 41 19	3294	77 5 37	3294	78 29 56	3294	79 54 15	3293
	Venus W.	73 52 45	3525	75 12 42	3528	76 32 35	3530	77 52 26	3531
	α Pegasi W.	60 50 21	3597	62 8 59	3586	63 27 49	3574	64 46 52	3564

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
3	SUN W.	28 52 6	2584	30 31 23	2602	32 10 15	2621	33 48 42	2638
	α Arietis E.	83 51 12	2416	82 8 0	2434	80 25 14	2453	78 42 54	2472
4	SUN W.	41 54 38	2735	43 30 31	2756	45 5 57	2775	46 40 58	2796
	α Arietis E.	70 18 16	2577	68 38 49	2600	66 59 54	2623	65 21 30	2646
	Aldebaran E.	101 8 34	2405	99 25 7	2424	97 42 6	2442	95 59 31	2460
5	SUN W.	54 29 24	2897	56 1 47	2917	57 33 44	2937	59 5 16	2957
	α Arietis E.	57 17 46	2775	55 42 45	2802	54 8 20	2831	52 34 32	2860
	Aldebaran E.	87 33 12	2555	85 53 15	2573	84 13 43	2592	82 34 37	2610
6	SUN W.	66 36 45	3054	68 5 51	3073	69 34 34	3091	71 2 55	3109
	Mars W.	25 43 13	2981	27 13 49	2998	28 44 4	3015	30 13 58	3032
	Venus W.	24 6 2	3119	25 33 48	3137	27 1 13	3155	28 28 16	3173
	α Arietis E.	44 55 22	3023	43 25 38	3060	41 56 40	3100	40 28 30	3142
	Aldebaran E.	74 25 18	2700	72 48 38	2718	71 12 22	2735	69 36 28	2750
7	SUN W.	78 19 17	3194	79 45 33	3211	81 11 29	3225	82 37 8	3242
	Mars W.	37 38 20	3113	39 6 14	3128	40 33 50	3143	42 1 7	3158
	Fomalhaut W.	36 35 57	3449	37 57 18	3423	39 19 9	3399	40 41 27	3379
	Venus W.	35 38 20	3257	37 3 22	3273	38 28 5	3288	39 52 30	3304
	α Arietis E.	33 21 21	3401	31 59 6	3468	30 38 6	3544	29 18 30	3627
	Aldebaran E.	61 42 19	2830	60 8 30	2845	58 35 0	2859	57 1 49	2873
8	SUN W.	89 41 3	3320	91 5 3	3323	92 28 48	3334	93 52 20	3345
	Mars W.	49 13 22	3224	50 39 3	3236	52 4 29	3247	53 29 42	3259
	Fomalhaut W.	47 37 23	3322	49 1 9	3316	50 25 2	3311	51 49 1	3306
	Venus W.	46 50 22	3372	48 13 10	3385	49 35 44	3397	50 58 4	3408
	α Pegasi W.	36 5 20	4290	37 12 22	4209	38 20 40	4136	39 30 7	4073
	Aldebaran E.	49 20 13	2938	47 48 42	2949	46 17 25	2960	44 46 22	2970
	Pollux E.	93 35 57	2962	92 4 57	2973	90 34 11	2985	89 3 39	2995
9	SUN W.	100 46 54	3394	102 9 17	3404	103 31 29	3411	104 53 33	3419
	Mars W.	60 32 43	3307	61 56 46	3314	63 20 41	3323	64 44 26	3330
	Fomalhaut W.	58 49 50	3296	60 14 6	3295	61 38 23	3295	63 2 40	3295
	Venus W.	57 46 42	3457	59 7 54	3466	60 28 56	3474	61 49 49	3481
	α Pegasi W.	45 30 53	3844	46 45 10	3812	48 0 0	3782	49 15 21	3756
	Aldebaran E.	37 14 18	3018	35 44 28	3026	34 14 47	3034	32 45 16	3041
	Pollux E.	81 34 4	3041	80 4 42	3049	78 35 30	3057	77 6 28	3064
10	SUN W.	111 41 57	3448	113 3 19	3453	114 24 36	3456	115 45 49	3460
	Mars W.	71 41 20	3358	73 4 24	3362	74 27 24	3366	75 50 19	3370
	Fomalhaut W.	70 4 8	3295	71 28 25	3294	72 52 43	3294	74 17 1	3294
	Venus W.	68 32 23	3511	69 52 35	3514	71 12 43	3519	72 32 46	3523
	α Pegasi W.	55 38 18	3653	56 55 55	3638	58 13 48	3623	59 31 57	3610
	Aldebaran E.	25 19 50	3073	23 51 7	3078	22 22 31	3084	20 54 2	3090
	Pollux E.	69 43 15	3093	68 14 57	3098	66 46 45	3102	65 18 38	3106
11	Saturn E.	96 7 54	3037	94 38 27	3040	93 9 4	3044	91 39 46	3047
	SUN W.	122 31 7	3470	123 52 5	3471	125 13 2	3471	126 33 59	3471
	Mars W.	82 44 7	3380	84 6 46	3379	85 29 26	3380	86 52 5	3380
	Fomalhaut W.	81 18 35	3292	82 42 56	3292	84 7 17	3290	85 31 40	3289
	Venus W.	79 12 16	3532	80 32 5	3533	81 51 53	3534	83 11 40	3533
	α Pegasi W.	66 6 6	3554	67 25 31	3544	68 45 7	3535	70 4 53	3526

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
11	Pollux E.	63 50 36	3110	62 22 38	3113	60 54 44	3115	59 26 53	3119
	Saturn E.	90 10 32	3050	88 41 21	3052	87 12 13	3053	85 43 6	3056
	Regulus E.	99 32 41	3078	98 4 5	3080	96 35 31	3082	95 7 0	3084
12	Mars W.	88 14 44	3380	89 37 23	3379	91 0 4	3378	92 22 46	3376
	Fomalhaut W.	86 56 4	3288	88 20 30	3288	89 44 56	3285	91 9 25	3284
	Venus W.	84 31 28	3532	85 51 17	3531	87 11 7	3529	88 30 59	3528
	α Pegasi W.	71 24 48	3518	72 44 52	3510	74 5 5	3502	75 25 27	3496
	α Arietis W.	28 8 41	3830	29 23 12	3764	30 38 52	3705	31 55 34	3654
	Pollux E.	52 8 22	3127	50 40 45	3129	49 13 10	3129	47 45 36	3130
	Saturn E.	78 17 51	3056	76 48 47	3055	75 19 42	3054	73 50 36	3052
	Regulus E.	87 44 39	3085	86 16 11	3083	84 47 41	3082	83 19 10	3081
13	Fomalhaut W.	98 12 14	3276	99 36 53	3274	101 1 35	3272	102 26 19	3271
	Venus W.	95 10 55	3513	96 31 5	3509	97 51 19	3505	99 11 38	3500
	α Pegasi W.	82 9 10	3462	83 30 17	3456	84 51 30	3450	86 12 50	3446
	α Arietis W.	38 31 8	3466	39 52 10	3438	41 13 44	3412	42 35 47	3389
	Pollux E.	40 28 0	3133	39 0 31	3135	37 33 4	3137	36 5 39	3138
	Saturn E.	66 24 25	3039	64 55 0	3035	63 25 30	3031	61 55 56	3027
	Regulus E.	75 55 57	3068	74 27 8	3064	72 58 14	3060	71 29 16	3056
14	α Pegasi W.	93 0 55	3421	94 22 48	3416	95 44 46	3414	97 6 47	3410
	α Arietis W.	49 32 14	3290	50 56 37	3274	52 21 19	3258	53 46 20	3243
	Pollux E.	28 49 24	3160	27 22 27	3168	25 55 40	3180	24 29 7	3194
	Saturn E.	54 26 42	3003	52 56 33	2997	51 26 17	2991	49 55 53	2985
	Regulus E.	64 3 5	3033	62 33 33	3027	61 3 54	3022	59 34 8	3016
15	α Arietis W.	60 55 37	3175	62 22 16	3163	63 49 10	3150	65 16 19	3139
	Aldebaran W.	28 15 45	2986	29 46 15	2978	31 16 55	2970	32 47 45	2963
	Saturn E.	42 22 1	2954	40 50 50	2946	39 19 30	2940	37 48 2	2933
	Regulus E.	52 3 26	2985	50 32 54	2978	49 2 14	2972	47 31 26	2965
	Spica E.	105 57 52	3015	104 27 58	3007	102 57 54	3001	101 27 42	2993
16	α Arietis W.	72 35 27	3084	74 3 56	3074	75 32 37	3064	77 1 31	3054
	Aldebaran W.	40 24 21	2924	41 56 10	2915	43 28 10	2907	45 0 20	2899
	Saturn E.	30 8 27	2898	28 36 5	2890	27 3 33	2882	25 30 51	2876
	Regulus E.	39 55 14	2930	38 23 33	2924	36 51 44	2916	35 19 46	2910
	Spica E.	93 54 14	2954	92 23 4	2946	90 51 43	2938	89 20 12	2931
17	α Arietis W.	84 28 59	3008	85 59 2	2999	87 29 16	2990	88 59 41	2981
	Aldebaran W.	52 43 47	2858	54 17 0	2850	55 50 23	2842	57 23 57	2833
	Spica E.	81 40 10	2891	80 7 40	2883	78 35 0	2876	77 2 10	2867
18	α Arietis W.	96 34 17	2943	98 5 41	2937	99 37 13	2930	101 8 54	2923
	Aldebaran W.	65 14 29	2792	66 49 8	2784	68 23 57	2775	69 58 58	2767
	Pollux W.	21 53 25	2992	23 23 48	2960	24 54 51	2931	26 26 30	2906
	Spica E.	69 15 31	2830	67 41 42	2823	66 7 44	2816	64 33 37	2809
19	Aldebaran W.	77 56 45	2725	79 32 51	2717	81 9 8	2708	82 45 37	2701
	Pollux W.	34 11 45	2812	35 45 57	2797	37 20 29	2783	38 55 19	2769
	Spica E.	56 40 44	2775	55 5 44	2769	53 30 35	2763	51 55 19	2757
	Antares E.	102 34 39	2769	100 59 30	2760	99 24 10	2751	97 48 38	2743

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
			^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
11	Pollux	E.	57 59 6	3121	56 31 22	3123	55 3 40	3124	53 36 0	3126
	Saturn	E.	84 14 2	3056	82 44 59	3056	81 15 56	3057	79 46 54	3056
	Regulus	E.	93 38 31	3084	92 10 2	3085	90 41 34	3086	89 13 7	3085
12	Mars	W.	93 45 30	3373	95 8 17	3371	96 31 7	3368	97 54 0	3365
	Fomalhaut	W.	92 35 55	3282	93 58 27	3281	95 23 1	3280	96 47 36	3277
	Venus	W.	89 50 52	3525	91 10 48	3523	92 30 47	3520	93 50 49	3516
	α Pegasi	W.	76 45 56	3488	78 6 34	3481	79 27 19	3475	80 48 11	3469
	α Arietis	W.	33 13 10	3608	34 31 36	3566	35 50 47	3529	37 10 39	3496
	Pollux	E.	46 18 3	3131	44 50 31	3132	43 23 0	3132	41 55 29	3133
	Saturn	E.	72 21 27	3050	70 52 16	3048	69 23 3	3045	67 53 46	3042
	Regulus	E.	81 50 37	3079	80 22 2	3076	78 53 23	3074	77 24 42	3071
13	Fomalhaut	W.	103 51 4	3270	105 15 51	3268	106 40 40	3266	108 5 31	3264
	Venus	W.	100 32 2	3496	101 52 31	3490	103 13 6	3485	104 33 47	3480
	α Pegasi	W.	87 34 15	3439	88 55 47	3434	90 17 25	3430	91 39 8	3426
	α Arietis	W.	43 58 16	3366	45 21 11	3345	46 44 30	3325	48 8 12	3308
	Pollux	E.	34 38 16	3141	33 10 56	3143	31 43 39	3148	30 16 28	3154
	Saturn	E.	60 26 17	3022	58 56 32	3018	57 26 42	3013	55 56 45	3008
	Regulus	E.	70 0 13	3052	68 31 5	3047	67 1 51	3043	65 32 31	3038
14	α Pegasi	W.	98 28 52	3407	99 51 1	3404	101 13 13	3402	102 35 27	3400
	α Arietis	W.	55 11 38	3229	56 37 13	3214	58 3 5	3200	59 29 14	3188
	Pollux	E.	23 2 51	3212	21 36 56	3235	20 11 28	3266	18 46 37	3305
	Saturn	E.	48 25 22	2980	46 54 44	2973	45 23 58	2966	43 53 3	2961
	Regulus	E.	58 4 15	3009	56 34 14	3004	55 4 6	2997	53 33 50	2991
15	α Arietis	W.	66 43 41	3128	68 11 17	3116	69 39 7	3105	71 7 10	3094
	Aldebaran	W.	34 18 44	2955	35 49 53	2946	37 21 13	2939	38 52 42	2931
	Saturn	E.	36 16 25	2926	34 44 39	2919	33 12 44	2912	31 40 40	2905
	Regulus	E.	46 0 29	2958	44 29 23	2951	42 58 9	2944	41 26 46	2937
	Spica	E.	99 57 20	2985	98 26 48	2977	96 56 6	2969	95 25 15	2962
16	α Arietis	W.	78 30 37	3044	79 59 55	3034	81 29 25	3026	82 59 6	3016
	Aldebaran	W.	46 32 40	2891	48 5 11	2883	49 37 52	2874	51 10 44	2866
	Saturn	E.	23 58 1	2869	22 25 2	2861	20 51 53	2855	19 18 36	2849
	Regulus	E.	33 47 40	2903	32 15 25	2896	30 43 1	2891	29 10 30	2884
	Spica	E.	87 48 32	2922	86 16 41	2915	84 44 41	2906	83 12 30	2899
17	α Arietis	W.	90 30 17	2974	92 1 2	2965	93 31 58	2958	95 3 3	2951
	Aldebaran	W.	58 57 42	2825	60 31 37	2816	62 5 44	2808	63 40 1	2800
	Spica	E.	75 29 9	2860	73 55 59	2852	72 22 39	2845	70 49 10	2838
18	α Arietis	W.	102 40 44	2917	104 12 41	2911	105 44 46	2905	107 16 58	2899
	Aldebaran	W.	71 34 9	2758	73 9 32	2750	74 45 5	2742	76 20 49	2733
	Pollux	W.	27 58 41	2884	29 31 20	2864	31 4 25	2845	32 37 54	2828
	Spica	E.	62 59 21	2801	61 24 55	2795	59 50 20	2788	58 15 36	2782
19	Aldebaran	W.	84 22 16	2692	85 59 7	2683	87 36 9	2675	89 13 22	2667
	Pollux	W.	40 30 27	2756	42 5 52	2744	43 41 33	2732	45 17 30	2721
	Spica	E.	50 19 55	2751	48 44 23	2747	47 8 45	2741	45 33 0	2737
	Antares	E.	96 12 55	2735	94 37 1	2725	93 0 55	2717	91 24 38	2708

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
20	Aldebaran W.	90 50 46	2658	92 28 22	2650	94 6 9	2642	95 44 7	2633
	Pollux W.	46 53 42	2710	48 30 9	2698	50 6 51	2687	51 43 48	2677
	Saturn W.	20 41 37	2640	22 19 38	2629	23 57 53	2621	25 36 20	2612
	Spica E.	43 57 9	2733	42 21 13	2730	40 45 13	2727	39 9 9	2725
	Antares E.	89 48 9	2701	88 11 30	2692	86 34 40	2683	84 57 38	2675
21	Pollux W.	59 52 0	2626	61 30 19	2616	63 8 52	2607	64 47 38	2597
	Saturn W.	33 51 39	2567	35 31 20	2558	37 11 12	2548	38 51 18	2540
	Regulus W.	23 53 13	2617	25 31 45	2604	27 10 34	2593	28 49 39	2583
	Spica E.	31 8 32	2732	29 32 34	2738	27 56 44	2747	26 21 7	2761
	Antares E.	76 49 44	2635	75 11 36	2627	73 33 18	2619	71 54 49	2612
	Jupiter E.	95 3 8	2658	93 25 32	2649	91 47 44	2641	90 9 45	2632
	SUN E.	129 42 57	2935	128 11 23	2925	126 39 36	2916	125 7 37	2907
22	Pollux W.	73 4 46	2548	74 44 52	2539	76 25 11	2530	78 5 42	2520
	Saturn W.	47 14 52	2495	48 56 12	2486	50 37 45	2476	52 19 32	2467
	Regulus W.	37 8 41	2530	38 49 12	2521	40 29 56	2510	42 10 55	2501
	Antares E.	63 39 46	2573	62 0 14	2566	60 20 32	2559	58 40 41	2552
	Jupiter E.	81 56 42	2586	80 17 28	2577	78 38 2	2568	76 58 23	2559
	SUN E.	117 24 42	2859	115 51 30	2848	114 18 5	2839	112 44 28	2828
23	Pollux W.	86 31 40	2473	88 13 31	2463	89 55 36	2454	91 37 54	2445
	Saturn W.	60 51 38	2421	62 34 43	2411	64 18 2	2403	66 1 33	2392
	Regulus W.	50 39 12	2452	52 21 33	2442	54 4 8	2433	55 46 56	2423
	Antares E.	50 19 4	2521	48 38 20	2515	46 57 28	2511	45 16 30	2506
	Jupiter E.	68 36 53	2512	66 55 56	2502	65 14 46	2492	63 33 21	2483
	SUN E.	104 53 7	2779	103 18 11	2769	101 43 3	2759	100 7 41	2748
24	Pollux W.	100 12 41	2398	101 56 18	2389	103 40 8	2380	105 24 11	2372
	Saturn W.	74 42 36	2346	76 27 29	2336	78 12 36	2327	79 57 56	2318
	Regulus W.	64 24 25	2374	66 8 37	2365	67 53 2	2356	69 37 40	2346
	Antares E.	36 50 32	2498	35 9 16	2491	33 28 4	2504	31 46 57	2512
	Jupiter E.	55 3 1	2435	53 20 16	2426	51 37 18	2417	49 54 7	2407
	SUN E.	92 7 29	2698	90 30 47	2687	88 53 50	2678	87 16 41	2667
25	Saturn W.	88 48 1	2272	90 34 42	2263	92 21 36	2254	94 8 43	2246
	Regulus W.	78 24 18	2300	80 10 18	2291	81 56 30	2282	83 42 56	2274
	Spica W.	25 18 46	2485	27 0 21	2454	28 42 39	2427	30 25 35	2404
	Jupiter E.	41 14 52	2362	39 30 22	2353	37 45 39	2345	36 0 45	2336
	SUN E.	79 7 30	2619	77 29 1	2609	75 50 18	2600	74 11 23	2591
26	Saturn W.	103 7 23	2206	104 55 42	2198	106 44 13	2191	108 32 54	2184
	Regulus W.	92 38 10	2233	94 25 48	2226	96 13 37	2218	98 1 37	2212
	Spica W.	39 7 40	2315	40 53 17	2302	42 39 13	2289	44 25 28	2277
	SUN E.	65 53 43	2548	64 13 36	2540	62 33 18	2533	60 52 50	2525
27	Spica W.	53 20 38	2231	55 8 19	2223	56 56 12	2217	58 44 14	2210
	SUN E.	52 28 3	2493	50 46 40	2488	49 5 10	2484	47 23 34	2479
28	Spica W.	67 46 26	2189	69 35 10	2186	71 23 58	2185	73 12 48	2183
	SUN E.	38 54 13	2465	37 12 10	2464	35 30 6	2463	33 48 1	2463

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
20.	Aldebaran W.	97 22 17	2625	99 0 38	2616	100 39 11	2608	102. 17 55	2599
	Pollux W.	53 20 59	2667	54 58 23	2656	56 36 2	2646	58 13 54	2636
	Saturn W.	27 14 59	2603	28 53 50	2593	30 32 54	2584	32 12 11	2576
	Spica E.	37 33 2	2723	35 56 53	2723	34 20 44	2724	32 44 36	2727
	Antares E.	83 20 25	2667	81 43 1	2659	80 5 26	2651	78 27 40	2643
21	Pollux W.	66 26 37	2588	68 5 49	2577	69 45 15	2568	71 24 54	2558
	Saturn W.	40 31 36	2531	42 12 6	2522	43 52 48	2512	45 33 44	2504
	Regulus W.	30 28 58	2572	32 8 32	2561	33 48 21	2551	35 28 24	2540
	Spica E.	24 45 48	2779	23 10 53	2803	21 36 20	2835	20 2 46	2876
	Antares E.	70 16 10	2603	68 37 19	2596	66 58 18	2588	65 19 7	2581
	Jupiter E.	88 31 33	2623	86 53 9	2613	85 14 32	2604	83 35 43	2596
	Sun E.	123 35 27	2897	122 3 4	2887	120 30 29	2878	118 57 42	2868
22	Pollux W.	79 46 27	2511	81 27 25	2501	83 8 37	2492	84 50 2	2482
	Saturn W.	54 1 31	2458	55 43 43	2449	57 26 8	2440	59 8 46	2430
	Regulus W.	43 52 7	2492	45 33 32	2481	47 15 12	2472	48 57 5	2462
	Antares E.	57 0 40	2545	55 20 29	2539	53 40 10	2532	51 59 41	2526
	Jupiter E.	75 18 31	2549	73 38 26	2540	71 58 8	2530	70 17 37	2521
	Sun E.	111 10 37	2819	109 36 34	2809	108 2 18	2799	106 27 49	2789
23	Pollux W.	93 20 25	2436	95 3 9	2426	96 46 7	2417	98 29 17	2408
	Saturn W.	67 45 19	2383	69 29 18	2374	71 13 30	2364	72 57 56	2355
	Regulus W.	57 29 58	2413	59 13 14	2403	60 56 44	2394	62 40 28	2384
	Antares E.	43 35 25	2503	41 54 16	2500	40 13 3	2499	38 31 48	2498
	Jupiter E.	61 51 44	2473	60 9 53	2464	58 27 49	2454	56 45 31	2445
	Sun E.	98 32 5	2739	96 56 17	2728	95 20 14	2719	93 43 59	2707
24	Pollux W.	107 8 26	2364	108 52 53	2355	110 37 33	2346	112 22 25	2337
	Saturn W.	81 43 30	2308	83 29 18	2299	85 15 19	2290	87 1 33	2281
	Regulus W.	71 22 33	2337	73 7 39	2328	74 52 58	2318	76 38 31	2309
	Antares E.	30 6 1	2522	28 25 18	2535	26 44 54	2553	25 4 55	2579
	Jupiter E.	48 10 42	2398	46 27 4	2389	44 43 13	2380	42 59 9	2371
	Sun E.	85 39 17	2657	84 1 40	2648	82 23 50	2638	80 45 47	2628
25	Saturn W.	95 56 2	2237	97 43 35	2229	99 31 19	2221	101 19 15	2213
	Regulus W.	85 29 34	2265	87 16 25	2257	89 3 28	2249	90 50 43	2241
	Spica W.	32 9 4	2382	33 53 4	2364	35 37 31	2346	37 22 23	2329
	Jupiter E.	34 15 38	2328	32 30 19	2321	30 44 50	2313	28 59 9	2306
	Sun E.	72 32 15	2582	70 52 55	2573	69 13 23	2564	67 33 39	2556
26	Saturn W.	110 21 45	2178	112 10 46	2171	113 59 57	2165	115 49 17	2159
	Regulus W.	99 49 47	2205	101 38 7	2199	103 26 36	2193	105 15 14	2187
	Spica W.	46 12 1	2267	47 58 49	2257	49 45 52	2247	51 33 9	2239
	Sun E.	59 12 11	2518	57 31 23	2511	55 50 25	2504	54 9 18	2499
27	Spica W.	60 32 26	2205	62 20 46	2200	64 9 13	2196	65 57 47	2192
	Sun E.	45 41 51	2475	44 0 3	2472	42 18 10	2469	40 36 13	2467
28	Spica W.	75 1 41	2183	76 50 34	2182	78 39 28	2183	80 28 21	2184
	Sun E.	32 5 56	2464	30 23 52	2465	28 41 50	2467	26 59 51	2470

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Frid.	1	21 1 27.92	10.175	S. 16 57 4.5	43.10	1 8.20	13 53.79	0.318
Sat.	2	21 5 31.70	10.140	16 39 41.1	43.84	1 8.09	14 0.99	0.283
Sun.	3	21 9 34.65	10.106	16 22 0.4	44.55	1 7.97	14 7.37	0.249
Mon.	4	21 13 36.77	10.071	16 4 2.6	45.25	1 7.86	14 12.92	0.214
Tues.	5	21 17 38.05	10.036	15 45 48.3	45.93	1 7.74	14 17.63	0.179
Wed.	6	21 21 38.50	10.002	15 27 17.9	46.59	1 7.63	14 21.52	0.145
Thur.	7	21 25 38.13	9.968	15 8 31.8	47.24	1 7.51	14 24.59	0.111
Frid.	8	21 29 36.94	9.934	14 49 30.5	47.86	1 7.40	14 26.84	0.077
Sat.	9	21 33 34.95	9.900	14 30 14.3	48.47	1 7.29	14 28.28	0.044
Sun.	10	21 37 32.15	9.867	14 10 43.7	49.07	1 7.18	14 28.93	0.011
Mon.	11	21 41 28.56	9.834	13 50 59.1	49.64	1 7.07	14 28.79	0.022
Tues.	12	21 45 24.19	9.802	13 31 0.9	50.20	1 6.96	14 27.87	0.054
Wed.	13	21 49 19.06	9.770	13 10 49.5	50.74	1 6.85	14 26.18	0.086
Thur.	14	21 53 13.16	9.739	12 50 25.4	51.26	1 6.74	14 23.74	0.117
Frid.	15	21 57 6.52	9.708	12 29 49.0	51.77	1 6.64	14 20.56	0.148
Sat.	16	22 0 59.16	9.679	12 9 0.6	52.26	1 6.54	14 16.65	0.178
Sun.	17	22 4 51.09	9.649	11 48 0.6	52.73	1 6.43	14 12.04	0.207
Mon.	18	22 8 42.33	9.621	11 26 49.5	53.19	1 6.33	14 6.74	0.235
Tues.	19	22 12 32.89	9.593	11 5 27.6	53.63	1 6.24	14 0.77	0.262
Wed.	20	22 16 22.81	9.567	10 43 55.4	54.05	1 6.14	13 54.15	0.289
Thur.	21	22 20 12.09	9.540	10 22 13.1	54.46	1 6.05	13 46.89	0.315
Frid.	22	22 24 0.75	9.515	10 0 21.2	54.85	1 5.96	13 39.02	0.340
Sat.	23	22 27 48.81	9.490	9 38 20.1	55.23	1 5.87	13 30.56	0.365
Sun.	24	22 31 36.29	9.466	9 16 10.2	55.59	1 5.79	13 21.51	0.389
Mon.	25	22 35 23.20	9.443	8 53 51.9	55.93	1 5.70	13 11.89	0.412
Tues.	26	22 39 9.56	9.420	8 31 25.6	56.25	1 5.62	13 1.72	0.435
Wed.	27	22 42 55.37	9.398	8 8 51.8	56.56	1 5.54	12 51.00	0.458
Thur.	28	22 46 40.64	9.376	7 46 10.8	56.85	1 5.46	12 39.75	0.479
Frid.	29	22 50 25.41	9.355	S. 7 23 23.0	57.12	1 5.39	12 28.00	0.500

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Frid.	1	21 1 25.57	S. 16 57 14.5	16 15.8	13 53.72	20 47 31.85
Sat.	2	21 5 29.33	16 39 51.4	16 15.6	14 0.93	20 51 28.40
Sun.	3	21 9 32.27	16 22 10.8	16 15.5	14 7.32	20 55 24.96
Mon.	4	21 13 34.38	16 4 13.3	16 15.3	14 12.87	20 59 21.51
Tues.	5	21 17 35.66	15 45 59.3	16 15.1	14 17.59	21 3 18.07
Wed.	6	21 21 36.11	15 27 29.1	16 15.0	14 21.48	21 7 14.62
Thur.	7	21 25 35.74	15 8 43.2	16 14.8	14 24.56	21 11 11.18
Frid.	8	21 29 34.55	14 49 42.0	16 14.6	14 26.82	21 15 7.73
Sat.	9	21 33 32.56	14 30 26.0	16 14.5	14 28.27	21 19 4.29
Sun.	10	21 37 29.77	14 10 55.5	16 14.3	14 28.93	21 23 0.84
Mon.	11	21 41 26.19	13 51 11.0	16 14.1	14 28.79	21 26 57.40
Tues.	12	21 45 21.83	13 31 13.0	16 13.9	14 27.88	21 30 53.95
Wed.	13	21 49 16.71	13 11 1.7	16 13.7	14 26.20	21 34 50.50
Thur.	14	21 53 10.83	12 50 37.7	16 13.5	14 23.77	21 38 47.06
Frid.	15	21 57 4.21	12 30 1.4	16 13.3	14 20.60	21 42 43.61
Sat.	16	22 0 56.86	12 9 13.0	16 13.1	14 16.70	21 46 40.16
Sun.	17	22 4 48.81	11 48 13.1	16 12.9	14 12.09	21 50 36.72
Mon.	18	22 8 40.07	11 27 2.0	16 12.7	14 6.79	21 54 33.27
Tues.	19	22 12 30.65	11 5 40.2	16 12.5	14 0.83	21 58 29.83
Wed.	20	22 16 20.59	10 44 7.9	16 12.2	13 54.21	22 2 26.38
Thur.	21	22 20 9.89	10 22 25.6	16 12.0	13 46.96	22 6 22.93
Frid.	22	22 23 58.58	10 0 33.7	16 11.8	13 39.10	22 10 19.49
Sat.	23	22 27 46.68	9 38 32.6	16 11.5	13 30.64	22 14 16.04
Sun.	24	22 31 34.19	9 16 22.6	16 11.3	13 21.59	22 18 12.59
Mon.	25	22 35 21.12	8 54 4.2	16 11.1	13 11.98	22 22 9.15
Tues.	26	22 39 7.51	8 31 37.8	16 10.8	13 1.81	22 26 5.70
Wed.	27	22 42 53.35	8 9 3.9	16 10.6	12 51.10	22 30 2.25
Thur.	28	22 46 38.66	7 46 22.8	16 10.3	12 39.85	22 33 58.81
Frid.	29	22 50 23.46	S. 7 23 34.9	16 10.1	12 28.10	22 37 55.36

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	° 312 53 17.8	S. 0° 31	9.9937479	^h 3 ^m 11 ^s 56.62	16' 0.8	15 54.7	58 40.2	58 17.7
2	313 54 10.2	0.41	.9938153	3 8 0.71	15 48.2	15 41.6	57 54.0	57 29.6
3	314 55 1.3	0.49	.9938841	3 4 4.80	15 34.8	15 28.2	57 5.0	56 40.7
4	315 55 51.0	0.53	9.9939543	3 0 8.89	15 21.8	15 15.7	56 17.2	55 55.0
5	316 56 39.3	0.55	.9940259	2 56 12.99	15 10.1	15 5.0	55 34.3	55 15.5
6	317 57 26.1	0.54	.9940991	2 52 17.08	15 0.4	14 56.5	54 58.8	54 44.5
7	318 58 11.3	0.50	9.9941739	2 48 21.17	14 53.3	14 50.7	54 32.7	54 23.4
8	319 58 55.0	0.44	.9942504	2 44 25.26	14 48.9	14 47.8	54 16.8	54 12.8
9	320 59 37.1	0.37	.9943287	2 40 29.35	14 47.5	14 47.8	54 11.4	54 12.5
10	322 0 17.6	0.29	9.9944089	2 36 33.44	14 48.8	14 50.4	54 16.1	54 22.0
11	323 0 56.5	0.18	.9944911	2 32 37.53	14 52.6	14 55.3	54 30.1	54 40.1
12	324 1 33.7	S. 0° 07	.9945752	2 28 41.62	14 58.5	15 2.1	54 51.8	55 5.0
13	325 2 9.3	N. 0° 05	9.9946614	2 24 45.72	15 6.0	15 10.2	55 19.4	55 34.8
14	326 2 43.2	0.17	.9947497	2 20 49.81	15 14.7	15 19.2	55 51.0	56 7.5
15	327 3 15.5	0.28	.9948401	2 16 53.90	15 23.7	15 28.3	56 24.3	56 41.0
16	328 3 46.2	0.39	9.9949325	2 12 57.99	15 32.7	15 37.1	56 57.3	57 13.2
17	329 4 15.4	0.47	.9950271	2 9 2.09	15 41.2	15 45.1	57 28.3	57 42.7
18	330 4 43.1	0.53	.9951238	2 5 6.18	15 48.8	15 52.2	57 56.1	58 8.5
19	331 5 9.3	0.55	9.9952225	2 1 10.27	15 55.3	15 58.2	58 20.0	58 30.4
20	332 5 34.1	0.55	.9953230	1 57 14.36	16 0.7	16 3.0	58 39.8	58 48.2
21	333 5 57.6	0.52	.9954253	1 53 18.45	16 5.0	16 6.8	58 55.6	59 2.0
22	334 6 19.7	0.45	9.9955291	1 49 22.55	16 8.3	16 9.5	59 7.5	59 11.9
23	335 6 40.5	0.36	.9956344	1 45 26.64	16 10.4	16 11.0	59 15.3	59 17.5
24	336 7 0.0	0.24	.9957409	1 41 30.73	16 11.3	16 11.1	59 18.5	59 18.0
25	337 7 18.0	N. 0° 11	9.9958483	1 37 34.82	16 10.6	16 9.6	59 16.1	59 12.5
26	338 7 34.5	S. 0° 03	.9959565	1 33 38.92	16 8.2	16 6.2	59 7.2	59 0.0
27	339 7 49.4	0.17	.9960654	1 29 43.01	16 3.7	16 0.7	58 50.9	58 39.9
28	340 8 2.7	0.29	.9961748	1 25 47.10	15 57.3	15 53.3	58 27.1	58 12.6
29	341 8 14.3	S. 0° 40	9.9962849	1 21 51.20	15 48.9	15 44.2	57 56.5	57 39.1

MEAN TIME.

THE MOON'S

Day of the Month.

	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	327 33 0.1	334 29 3.7	S. 3 7 10.1	S. 3 36 22.7	1.1	1 18.7	13 44.9
2	341 19 47.7	348 4 56.1	4 2 4.0	4 23 59.3	2.1	2 10.2	14 34.7
3	354 44 20.4	1 17 59.4	4 41 59.4	4 55 59.8	3.1	2 58.4	15 21.4
4	7 45 58.7	14 8 31.2	5 5 59.8	5 12 2.6	4.1	3 44.0	16 6.1
5	20 25 54.9	26 38 33.2	5 14 14.0	5 12 41.2	5.1	4 27.9	16 49.6
6	32 46 53.9	38 51 28.0	5 7 33.4	4 59 1.1	6.1	5 11.2	17 32.9
7	44 52 49.7	50 51 34.8	4 47 14.5	4 32 25.0	7.1	5 54.6	18 16.7
8	56 48 20.3	62 43 44.4	4 14 44.2	3 54 23.9	8.1	6 39.0	19 1.7
9	68 38 24.8	74 32 59.4	3 31 36.0	3 6 33.4	9.1	7 24.7	19 48.2
10	80 28 4.8	86 24 16.2	2 39 29.1	2 10 37.5	10.1	8 12.2	20 36.5
11	92 22 7.5	98 22 9.0	1 40 13.2	1 8 32.8	11.1	9 1.2	21 26.2
12	104 24 50.1	110 30 35.6	S. 0 35 53.7	S. 0 2 35.3	12.1	9 51.5	22 16.8
13	116 39 47.6	122 52 44.1	N. 0 31 1.6	N. 1 4 34.5	13.1	10 42.3	23 7.6
14	129 9 38.9	135 30 41.2	1 37 39.5	2 9 51.4	14.1	11 32.9	23 58.8
15	141 55 56.2	148 25 23.9	2 40 43.5	3 9 48.9	15.1	12 22.9	* *
16	154 59 0.4	161 36 37.3	3 36 40.7	4 0 52.5	16.1	13 12.1	0 47.6
17	168 18 2.7	175 3 1.3	4 21 59.0	4 39 37.2	17.1	14 0.6	1 36.4
18	181 51 15.4	188 42 25.9	4 53 26.3	5 3 9.1	18.1	14 48.9	2 24.7
19	195 36 12.6	202 32 15.3	5 8 32.3	5 9 26.7	19.1	15 37.8	3 13.2
20	209 30 14.3	216 29 51.2	5 5 47.5	4 57 34.7	20.1	16 28.0	4 2.7
21	223 30 49.3	230 32 53.6	4 44 53.1	4 27 52.0	21.1	17 20.4	4 53.9
22	237 35 50.9	244 39 29.5	4 6 45.4	3 41 51.4	22.1	18 15.3	5 47.5
23	251 43 38.6	258 48 8.1	3 13 32.5	2 42 14.4	23.1	19 12.8	6 43.8
24	265 52 48.1	272 57 27.7	2 8 26.4	1 32 40.5	24.1	20 12.1	7 42.3
25	280 1 54.4	287 5 54.2	N. 0 55 31.1	N. 0 17 34.4	25.1	21 11.7	8 42.0
26	294 9 10.5	301 11 24.1	S. 0 20 32.7	S. 0 58 13.1	26.1	22 10.0	9 41.1
27	308 12 13.3	315 11 14.9	1 34 50.5	2 9 49.9	27.1	23 5.7	10 38.2
28	322 8 3.3	329 2 12.6	2 42 39.3	3 12 49.9	28.1	23 58.2	11 32.4
29	335 53 16.9	342 40 51.4	S. 3 39 56.7	S. 4 3 39.7	29.1	* *	12 23.3

The Moon's Longitude and Latitude are from HANSEN'S Tables *direct*; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 1.					SUNDAY 3.				
	^h ^m ^s		[°] ['] ["]	["]		^h ^m ^s		[°] ['] ["]	["]
0	22 3 24.12	21.183	S. 15 15 31.3	97.13	0	23 48 9.82	20.618	S. 6 24 20.3	119.10
1	22 5 43.04	21.123	15 5 46.1	97.92	1	23 50 13.40	20.575	6 12 25.2	119.25
2	22 8 1.60	21.063	14 55 56.3	98.68	2	23 52 16.72	20.533	6 0 29.3	119.39
3	22 10 19.80	21.003	14 46 1.9	99.44	3	23 54 19.80	20.493	5 48 32.5	119.53
4	22 12 37.63	20.942	14 36 3.0	100.18	4	23 56 22.63	20.453	5 36 35.0	119.64
5	22 14 55.10	20.883	14 25 59.8	100.90	5	23 58 25.23	20.413	5 24 36.8	119.75
6	22 17 12.22	20.823	14 15 52.2	101.62	6	0 0 27.59	20.373	5 12 38.0	119.85
7	22 19 28.97	20.763	14 5 40.4	102.31	7	0 2 29.71	20.334	5 0 38.6	119.94
8	22 21 45.37	20.703	13 55 24.5	102.98	8	0 4 31.60	20.297	4 48 38.7	120.03
9	22 24 1.41	20.643	13 45 4.6	103.65	9	0 6 33.27	20.259	4 36 38.3	120.10
10	22 26 17.09	20.584	13 34 40.7	104.31	10	0 8 34.71	20.223	4 24 37.5	120.15
11	22 28 32.42	20.525	13 24 12.9	104.95	11	0 10 35.94	20.187	4 12 36.5	120.20
12	22 30 47.39	20.467	13 13 41.3	105.58	12	0 12 36.95	20.151	4 0 35.1	120.25
13	22 33 2.02	20.408	13 3 6.0	106.18	13	0 14 37.75	20.116	3 48 33.5	120.28
14	22 35 16.29	20.350	12 52 27.2	106.77	14	0 16 38.34	20.082	3 36 31.8	120.29
15	22 37 30.22	20.293	12 41 44.8	107.35	15	0 18 38.73	20.048	3 24 30.0	120.31
16	22 39 43.80	20.235	12 30 59.0	107.92	16	0 20 38.02	20.014	3 12 28.1	120.31
17	22 41 57.04	20.178	12 20 9.9	108.46	17	0 22 38.90	19.982	3 0 26.3	120.30
18	22 44 9.93	20.121	12 9 17.5	109.00	18	0 24 38.70	19.951	2 48 24.5	120.29
19	22 46 22.49	20.064	11 58 21.9	109.53	19	0 26 38.31	19.919	2 36 22.8	120.26
20	22 48 34.70	20.008	11 47 23.2	110.04	20	0 28 37.73	19.888	2 24 21.4	120.23
21	22 50 46.58	20.953	11 36 21.4	110.53	21	0 30 36.96	19.858	2 12 20.1	120.19
22	22 52 58.13	20.897	11 25 16.8	111.01	22	0 32 36.02	19.828	2 0 19.1	120.13
23	22 55 9.34	20.842	S. 11 14 9.3	111.48	23	0 34 34.90	19.799	S. 1 48 18.5	120.07
SATURDAY 2.					MONDAY 4.				
0	22 57 20.23	20.788	S. 11 2 59.0	111.94	0	0 36 33.61	19.772	S. 1 36 18.3	120.00
1	22 59 30.79	20.733	10 51 46.0	112.38	1	0 38 32.16	19.744	1 24 18.5	119.93
2	23 1 41.02	20.678	10 40 30.4	112.81	2	0 40 30.54	19.717	1 12 19.2	119.84
3	23 3 50.93	20.625	10 29 12.3	113.23	3	0 42 28.76	19.691	1 0 20.4	119.75
4	23 6 0.52	20.573	10 17 51.7	113.63	4	0 44 26.83	19.665	0 48 22.2	119.65
5	23 8 9.80	20.521	10 6 28.8	114.02	5	0 46 24.74	19.639	0 36 24.6	119.54
6	23 10 18.77	20.468	9 55 3.5	114.40	6	0 48 22.50	19.615	0 24 27.7	119.42
7	23 12 27.42	20.416	9 43 36.0	114.76	7	0 50 20.12	19.591	0 12 31.6	119.28
8	23 14 35.76	20.365	9 32 6.4	115.11	8	0 52 17.59	19.568	S. 0 0 36.3	119.16
9	23 16 43.80	20.315	9 20 34.7	115.45	9	0 54 14.93	19.545	N. 0 11 18.3	119.02
10	23 18 51.54	20.264	9 9 1.0	115.78	10	0 56 12.13	19.523	0 23 11.9	118.86
11	23 20 58.97	20.214	8 57 25.3	116.09	11	0 58 9.20	19.501	0 35 4.6	118.71
12	23 23 6.11	20.166	8 45 47.9	116.38	12	1 0 6.14	19.480	0 46 56.4	118.54
13	23 25 12.96	20.117	8 34 8.7	116.68	13	1 2 2.96	19.460	0 58 47.1	118.37
14	23 27 19.51	20.068	8 22 27.7	116.97	14	1 3 59.66	19.441	1 10 36.8	118.19
15	23 29 25.78	20.022	8 10 45.1	117.23	15	1 5 56.25	19.422	1 22 25.4	118.00
16	23 31 31.77	20.974	7 59 1.0	117.48	16	1 7 52.72	19.403	1 34 12.8	117.80
17	23 33 37.47	20.928	7 47 15.4	117.72	17	1 9 49.08	19.385	1 45 59.0	117.60
18	23 35 42.90	20.882	7 35 28.4	117.95	18	1 11 45.34	19.368	1 57 44.0	117.39
19	23 37 48.05	20.836	7 23 40.0	118.17	19	1 13 41.50	19.351	2 9 27.7	117.18
20	23 39 52.93	20.792	7 11 50.4	118.38	20	1 15 37.55	19.335	2 21 10.1	116.95
21	23 41 57.55	20.748	6 59 59.5	118.58	21	1 17 33.52	19.320	2 32 51.1	116.73
22	23 44 1.90	20.703	6 48 7.5	118.76	22	1 19 29.39	19.305	2 44 30.8	116.49
23	23 46 5.99	20.660	6 36 14.4	118.93	23	1 21 25.18	19.291	2 56 9.0	116.23
24	23 48 9.82	20.618	S. 6 24 20.3	119.10	24	1 23 20.88	19.277	N. 3 7 45.6	115.98

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 5.					THURSDAY 7.				
0	1 23 20.88	19.277	N. 3 7 45.6	115.98	0	2 55 22.79	19.272	N. 11 43 41.7	96.73
1	1 25 16.50	19.264	3 19 20.8	115.73	1	2 57 18.46	19.284	11 53 20.5	96.20
2	1 27 12.05	19.252	3 30 54.4	115.46	2	2 59 14.20	19.297	12 2 56.1	95.66
3	1 29 7.52	19.240	3 42 26.3	115.19	3	3 1 10.02	19.310	12 12 28.4	95.11
4	1 31 2.98	19.229	3 53 56.7	114.93	4	3 3 5.92	19.323	12 21 57.4	94.55
5	1 32 58.27	19.218	4 5 25.4	114.63	5	3 5 1.90	19.338	12 31 23.0	93.98
6	1 34 53.54	19.208	4 16 52.3	114.34	6	3 6 57.97	19.352	12 40 45.2	93.42
7	1 36 48.76	19.198	4 28 17.5	114.05	7	3 8 54.12	19.366	12 50 4.0	92.85
8	1 38 43.92	19.189	4 39 40.9	113.74	8	3 10 50.36	19.381	12 59 19.4	92.28
9	1 40 39.03	19.181	4 51 2.4	113.43	9	3 12 46.69	19.397	13 8 31.3	91.69
10	1 42 34.09	19.173	5 2 22.1	113.12	10	3 14 43.12	19.413	13 17 39.7	91.10
11	1 44 29.10	19.166	5 13 39.8	112.79	11	3 16 39.64	19.428	13 26 44.5	90.50
12	1 46 24.08	19.160	5 24 55.6	112.47	12	3 18 36.26	19.445	13 35 45.7	89.90
13	1 48 19.02	19.153	5 36 9.4	112.13	13	3 20 32.98	19.463	13 44 43.3	89.30
14	1 50 13.92	19.147	5 47 21.1	111.78	14	3 22 29.81	19.480	13 53 37.3	88.69
15	1 52 8.78	19.142	5 58 30.8	111.44	15	3 24 26.74	19.498	14 2 27.6	88.08
16	1 54 3.62	19.138	6 9 38.4	111.09	16	3 26 23.78	19.515	14 11 14.2	87.46
17	1 55 58.44	19.135	6 20 43.9	110.73	17	3 28 20.92	19.533	14 19 57.1	86.83
18	1 57 53.24	19.132	6 31 47.2	110.36	18	3 30 18.18	19.553	14 28 36.2	86.20
19	1 59 48.02	19.128	6 42 48.2	109.99	19	3 32 15.35	19.572	14 37 11.5	85.56
20	2 1 42.78	19.126	6 53 47.1	109.62	20	3 34 13.04	19.592	14 45 42.9	84.92
21	2 3 37.53	19.124	7 4 43.6	109.23	21	3 36 10.65	19.611	14 54 10.5	84.28
22	2 5 32.27	19.123	7 15 37.8	108.84	22	3 38 8.37	19.631	15 2 34.2	83.62
23	2 7 27.01	19.123	N. 7 26 29.7	108.45	23	3 40 6.22	19.651	N. 15 10 53.9	82.96
WEDNESDAY 6.					FRIDAY 8.				
0	2 9 21.74	19.123	N. 7 37 19.2	108.05	0	3 42 4.18	19.671	N. 15 19 9.7	82.30
1	2 11 16.48	19.123	7 48 6.3	107.63	1	3 44 2.27	19.693	15 27 21.5	81.63
2	2 13 11.22	19.124	7 58 50.8	107.22	2	3 46 0.50	19.715	15 35 29.2	80.95
3	2 15 5.97	19.126	8 9 32.9	106.81	3	3 47 58.85	19.736	15 43 32.9	80.28
4	2 17 0.73	19.128	8 20 12.5	106.38	4	3 49 57.33	19.758	15 51 32.5	79.59
5	2 18 55.50	19.130	8 30 49.5	105.95	5	3 51 55.94	19.780	15 59 28.0	78.90
6	2 20 50.29	19.133	8 41 23.9	105.52	6	3 53 54.69	19.803	16 7 19.3	78.20
7	2 22 45.10	19.137	8 51 55.7	105.08	7	3 55 53.57	19.826	16 15 6.4	77.50
8	2 24 39.93	19.141	9 2 24.8	104.63	8	3 57 52.60	19.849	16 22 49.3	76.80
9	2 26 34.79	19.146	9 12 51.3	104.18	9	3 59 51.76	19.872	16 30 28.0	76.08
10	2 28 29.68	19.151	9 23 15.0	103.72	10	4 1 51.06	19.895	16 38 2.3	75.36
11	2 30 24.60	19.156	9 33 35.9	103.25	11	4 3 50.50	19.918	16 45 32.3	74.64
12	2 32 19.55	19.162	9 43 54.0	102.78	12	4 5 50.08	19.943	16 52 58.0	73.92
13	2 34 14.54	19.169	9 54 9.3	102.32	13	4 7 49.81	19.967	17 0 19.3	73.18
14	2 36 9.58	19.177	10 4 21.8	101.84	14	4 9 49.68	19.992	17 7 36.2	72.45
15	2 38 4.66	19.183	10 14 31.4	101.35	15	4 11 49.71	20.017	17 14 48.7	71.70
16	2 39 59.78	19.192	10 24 38.0	100.86	16	4 13 49.88	20.041	17 21 56.6	70.94
17	2 41 54.96	19.200	10 34 41.7	100.36	17	4 15 50.20	20.066	17 29 0.0	70.19
18	2 43 50.18	19.208	10 44 42.3	99.86	18	4 17 50.67	20.091	17 35 58.9	69.43
19	2 45 45.46	19.218	10 54 40.0	99.36	19	4 19 51.29	20.117	17 42 53.2	68.67
20	2 47 40.80	19.229	11 4 34.6	98.84	20	4 21 52.07	20.143	17 49 42.9	67.90
21	2 49 36.21	19.239	11 14 26.1	98.33	21	4 23 53.00	20.168	17 56 28.0	67.12
22	2 51 31.67	19.249	11 24 14.5	97.80	22	4 25 54.08	20.193	18 3 8.3	66.33
23	2 53 27.20	19.260	11 33 59.7	97.27	23	4 27 55.32	20.219	18 9 43.9	65.54
24	2 55 22.79	19.272	N. 11 43 41.7	96.73	24	4 29 56.71	20.245	N. 18 16 14.8	64.75

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 9.					MONDAY 11.				
0	4 29 56 ^{h m s} .71	20 ^s .245	N.18 16 14 ^{° ' "} .8	64 ["] .75	0	6 10 10 ^{h m s} .78	21 ^s .487	N.21 45 40 ^{° ' "} .5	20 ["] .62
1	4 31 58 ^{h m s} .26	20 ^s .272	18 22 40 ^{° ' "} .9	63 ["] .95	1	6 12 19 ^{h m s} .77	21 ^s .509	21 47 41 ^{° ' "} .1	19 ["] .58
2	4 33 59 ^{h m s} .97	20 ^s .298	18 29 2 ^{° ' "} .2	63 ["] .15	2	6 14 28 ^{h m s} .89	21 ^s .530	21 49 35 ^{° ' "} .5	18 ["] .54
3	4 36 1 ^{h m s} .84	20 ^s .324	18 35 18 ^{° ' "} .7	62 ["] .33	3	6 16 38 ^{h m s} .13	21 ^s .551	21 51 23 ^{° ' "} .6	17 ["] .50
4	4 38 3 ^{h m s} .86	20 ^s .351	18 41 30 ^{° ' "} .2	61 ["] .52	4	6 18 47 ^{h m s} .50	21 ^s .573	21 53 5 ^{° ' "} .5	16 ["] .47
5	4 40 6 ^{h m s} .05	20 ^s .378	18 47 36 ^{° ' "} .9	60 ["] .70	5	6 20 57 ^{h m s} .00	21 ^s .593	21 54 41 ^{° ' "} .2	15 ["] .42
6	4 42 8 ^{h m s} .39	20 ^s .404	18 53 38 ^{° ' "} .6	59 ["] .88	6	6 23 6 ^{h m s} .62	21 ^s .614	21 56 10 ^{° ' "} .5	14 ["] .36
7	4 44 10 ^{h m s} .90	20 ^s .432	18 59 35 ^{° ' "} .4	59 ["] .05	7	6 25 16 ^{h m s} .37	21 ^s .634	21 57 33 ^{° ' "} .5	13 ["] .31
8	4 46 13 ^{h m s} .57	20 ^s .458	19 5 27 ^{° ' "} .2	58 ["] .21	8	6 27 26 ^{h m s} .23	21 ^s .653	21 58 50 ^{° ' "} .2	12 ["] .25
9	4 48 16 ^{h m s} .40	20 ^s .485	19 11 13 ^{° ' "} .9	57 ["] .36	9	6 29 36 ^{h m s} .21	21 ^s .673	22 0 0 ^{° ' "} .5	11 ["] .19
10	4 50 19 ^{h m s} .39	20 ^s .512	19 16 55 ^{° ' "} .5	56 ["] .52	10	6 31 46 ^{h m s} .30	21 ^s .692	22 1 4 ^{° ' "} .5	10 ["] .13
11	4 52 22 ^{h m s} .54	20 ^s .538	19 22 32 ^{° ' "} .1	55 ["] .67	11	6 33 56 ^{h m s} .51	21 ^s .710	22 2 2 ^{° ' "} .1	9 ["] .06
12	4 54 25 ^{h m s} .85	20 ^s .566	19 28 3 ^{° ' "} .5	54 ["] .81	12	6 36 6 ^{h m s} .82	21 ^s .728	22 2 53 ^{° ' "} .2	7 ["] .98
13	4 56 29 ^{h m s} .33	20 ^s .593	19 33 29 ^{° ' "} .8	53 ["] .95	13	6 38 17 ^{h m s} .25	21 ^s .747	22 3 37 ^{° ' "} .9	6 ["] .92
14	4 58 32 ^{h m s} .97	20 ^s .620	19 38 50 ^{° ' "} .9	53 ["] .08	14	6 40 27 ^{h m s} .78	21 ^s .764	22 4 16 ^{° ' "} .2	5 ["] .84
15	5 0 36 ^{h m s} .77	20 ^s .648	19 44 6 ^{° ' "} .7	52 ["] .20	15	6 42 38 ^{h m s} .42	21 ^s .781	22 4 48 ^{° ' "} .0	4 ["] .76
16	5 2 40 ^{h m s} .74	20 ^s .675	19 49 17 ^{° ' "} .3	51 ["] .33	16	6 44 49 ^{h m s} .15	21 ^s .798	22 5 13 ^{° ' "} .3	3 ["] .68
17	5 4 44 ^{h m s} .87	20 ^s .702	19 54 22 ^{° ' "} .7	50 ["] .45	17	6 46 59 ^{h m s} .99	21 ^s .814	22 5 32 ^{° ' "} .2	2 ["] .60
18	5 6 49 ^{h m s} .16	20 ^s .728	19 59 22 ^{° ' "} .7	49 ["] .55	18	6 49 10 ^{h m s} .92	21 ^s .830	22 5 44 ^{° ' "} .5	1 ["] .51
19	5 8 53 ^{h m s} .61	20 ^s .756	20 4 17 ^{° ' "} .3	48 ["] .66	19	6 51 21 ^{h m s} .95	21 ^s .846	22 5 50 ^{° ' "} .3	0 ["] .42
20	5 10 58 ^{h m s} .23	20 ^s .783	20 9 6 ^{° ' "} .6	47 ["] .76	20	6 53 33 ^{h m s} .07	21 ^s .861	22 5 49 ^{° ' "} .5	0 ["] .68
21	5 13 3 ^{h m s} .00	20 ^s .809	20 13 50 ^{° ' "} .4	46 ["] .85	21	6 55 44 ^{h m s} .28	21 ^s .876	22 5 42 ^{° ' "} .2	1 ["] .77
22	5 15 7 ^{h m s} .94	20 ^s .837	20 18 28 ^{° ' "} .8	45 ["] .94	22	6 57 55 ^{h m s} .58	21 ^s .890	22 5 28 ^{° ' "} .3	2 ["] .87
23	5 17 13 ^{h m s} .04	20 ^s .864	N.20 23 1 ^{° ' "} .7	45 ["] .03	23	7 0 6 ^{h m s} .96	21 ^s .903	N.22 5 7 ^{° ' "} .8	3 ["] .97
SUNDAY 10.					TUESDAY 12.				
0	5 19 18 ^{h m s} .31	20 ^s .891	N.20 27 29 ^{° ' "} .1	44 ["] .11	0	7 2 18 ^{h m s} .42	21 ^s .917	N.22 4 40 ^{° ' "} .7	5 ["] .07
1	5 21 23 ^{h m s} .73	20 ^s .917	20 31 51 ^{° ' "} .0	43 ["] .18	1	7 4 29 ^{h m s} .96	21 ^s .930	22 4 7 ^{° ' "} .0	6 ["] .17
2	5 23 29 ^{h m s} .31	20 ^s .943	20 36 7 ^{° ' "} .3	42 ["] .25	2	7 6 41 ^{h m s} .58	21 ^s .943	22 3 26 ^{° ' "} .7	7 ["] .27
3	5 25 35 ^{h m s} .05	20 ^s .970	20 40 18 ^{° ' "} .0	41 ["] .32	3	7 8 53 ^{h m s} .28	21 ^s .955	22 2 39 ^{° ' "} .8	8 ["] .37
4	5 27 40 ^{h m s} .95	20 ^s .997	20 44 23 ^{° ' "} .1	40 ["] .38	4	7 11 5 ^{h m s} .04	21 ^s .966	22 1 46 ^{° ' "} .3	9 ["] .48
5	5 29 47 ^{h m s} .01	21 ^s .023	20 48 22 ^{° ' "} .5	39 ["] .43	5	7 13 16 ^{h m s} .87	21 ^s .978	22 0 46 ^{° ' "} .1	10 ["] .58
6	5 31 53 ^{h m s} .22	21 ^s .048	20 52 16 ^{° ' "} .3	38 ["] .48	6	7 15 28 ^{h m s} .77	21 ^s .988	21 59 39 ^{° ' "} .3	11 ["] .69
7	5 33 59 ^{h m s} .59	21 ^s .075	20 56 4 ^{° ' "} .3	37 ["] .53	7	7 17 40 ^{h m s} .73	21 ^s .998	21 58 25 ^{° ' "} .8	12 ["] .81
8	5 36 6 ^{h m s} .12	21 ^s .101	20 59 46 ^{° ' "} .6	36 ["] .57	8	7 19 52 ^{h m s} .75	22 ^s .008	21 57 5 ^{° ' "} .6	13 ["] .93
9	5 38 12 ^{h m s} .80	21 ^s .127	21 3 23 ^{° ' "} .1	35 ["] .61	9	7 22 4 ^{h m s} .83	22 ^s .018	21 55 38 ^{° ' "} .7	15 ["] .03
10	5 40 19 ^{h m s} .64	21 ^s .152	21 6 53 ^{° ' "} .9	34 ["] .64	10	7 24 16 ^{h m s} .97	22 ^s .027	21 54 5 ^{° ' "} .2	16 ["] .14
11	5 42 26 ^{h m s} .62	21 ^s .177	21 10 18 ^{° ' "} .8	33 ["] .67	11	7 26 29 ^{h m s} .15	22 ^s .034	21 52 25 ^{° ' "} .0	17 ["] .26
12	5 44 33 ^{h m s} .76	21 ^s .203	21 13 37 ^{° ' "} .9	32 ["] .69	12	7 28 41 ^{h m s} .38	22 ^s .043	21 50 38 ^{° ' "} .1	18 ["] .38
13	5 46 41 ^{h m s} .05	21 ^s .228	21 16 51 ^{° ' "} .1	31 ["] .71	13	7 30 53 ^{h m s} .66	22 ^s .051	21 48 44 ^{° ' "} .5	19 ["] .48
14	5 48 48 ^{h m s} .49	21 ^s .253	21 19 58 ^{° ' "} .4	30 ["] .72	14	7 33 5 ^{h m s} .99	22 ^s .058	21 46 44 ^{° ' "} .3	20 ["] .60
15	5 50 56 ^{h m s} .08	21 ^s .277	21 22 59 ^{° ' "} .7	29 ["] .73	15	7 35 18 ^{h m s} .35	22 ^s .064	21 44 37 ^{° ' "} .3	21 ["] .72
16	5 53 3 ^{h m s} .81	21 ^s .301	21 25 55 ^{° ' "} .1	28 ["] .73	16	7 37 30 ^{h m s} .76	22 ^s .071	21 42 23 ^{° ' "} .6	22 ["] .83
17	5 55 11 ^{h m s} .69	21 ^s .326	21 28 44 ^{° ' "} .5	27 ["] .73	17	7 39 43 ^{h m s} .20	22 ^s .076	21 40 3 ^{° ' "} .3	23 ["] .95
18	5 57 19 ^{h m s} .72	21 ^s .349	21 31 27 ^{° ' "} .9	26 ["] .73	18	7 41 55 ^{h m s} .67	22 ^s .081	21 37 36 ^{° ' "} .2	25 ["] .07
19	5 59 27 ^{h m s} .88	21 ^s .373	21 34 5 ^{° ' "} .2	25 ["] .72	19	7 44 8 ^{h m s} .17	22 ^s .087	21 35 2 ^{° ' "} .5	26 ["] .18
20	6 1 36 ^{h m s} .19	21 ^s .396	21 36 36 ^{° ' "} .5	24 ["] .71	20	7 46 20 ^{h m s} .71	22 ^s .091	21 32 22 ^{° ' "} .0	27 ["] .30
21	6 3 44 ^{h m s} .63	21 ^s .418	21 39 1 ^{° ' "} .7	23 ["] .69	21	7 48 33 ^{h m s} .26	22 ^s .094	21 29 34 ^{° ' "} .9	28 ["] .41
22	6 5 53 ^{h m s} .21	21 ^s .442	21 41 20 ^{° ' "} .8	22 ["] .67	22	7 50 45 ^{h m s} .84	22 ^s .098	21 26 41 ^{° ' "} .1	29 ["] .53
23	6 8 1 ^{h m s} .93	21 ^s .464	21 43 33 ^{° ' "} .7	21 ["] .64	23	7 52 58 ^{h m s} .43	22 ^s .101	21 23 40 ^{° ' "} .6	30 ["] .64

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 13.					FRIDAY 15.				
0	7 55 11.05	22.104	N.21 20 33.4	31.76	0	9 40 48.58	21.783	N.16 44 23.6	81.83
1	7 57 23.68	22.106	21 17 19.5	32.87	1	9 42 59.24	21.770	16 36 9.9	82.75
2	7 59 36.32	22.108	21 13 59.0	33.98	2	9 45 9.82	21.757	16 27 50.6	83.67
3	8 1 48.97	22.108	21 10 31.8	35.09	3	9 47 20.32	21.743	16 19 25.8	84.58
4	8 4 1.62	22.109	21 6 57.9	36.20	4	9 49 30.74	21.730	16 10 55.6	85.48
5	8 6 14.28	22.110	21 3 17.4	37.30	5	9 51 41.08	21.717	16 2 20.0	86.38
6	8 8 26.94	22.109	20 59 30.3	38.41	6	9 53 51.34	21.703	15 53 39.0	87.28
7	8 10 39.59	22.108	20 55 36.5	39.52	7	9 56 1.51	21.689	15 44 52.7	88.16
8	8 12 52.24	22.108	20 51 36.1	40.62	8	9 58 11.61	21.677	15 36 1.1	89.03
9	8 15 4.88	22.106	20 47 29.1	41.72	9	10 0 21.63	21.663	15 27 4.3	89.90
10	8 17 17.51	22.104	20 43 15.5	42.81	10	10 2 31.56	21.648	15 18 2.3	90.77
11	8 19 30.13	22.102	20 38 55.4	43.91	11	10 4 41.41	21.634	15 8 55.1	91.63
12	8 21 42.73	22.099	20 34 28.6	45.01	12	10 6 51.17	21.621	14 59 42.8	92.47
13	8 23 55.32	22.096	20 29 55.3	46.09	13	10 9 0.86	21.608	14 50 25.5	93.30
14	8 26 7.88	22.093	20 25 15.5	47.18	14	10 11 10.46	21.593	14 41 3.2	94.13
15	8 28 20.43	22.089	20 20 29.1	48.28	15	10 13 19.98	21.580	14 31 35.9	94.96
16	8 30 32.95	22.084	20 15 36.2	49.36	16	10 15 29.42	21.567	14 22 3.7	95.77
17	8 32 45.44	22.080	20 10 36.8	50.43	17	10 17 38.78	21.553	14 12 26.7	96.58
18	8 34 57.91	22.075	20 5 31.0	51.51	18	10 19 48.05	21.538	14 2 44.8	97.38
19	8 37 10.34	22.069	20 0 18.7	52.59	19	10 21 57.24	21.525	13 52 58.2	98.17
20	8 39 22.74	22.063	19 54 59.9	53.66	20	10 24 6.35	21.512	13 43 6.8	98.95
21	8 41 35.10	22.058	19 49 34.8	54.73	21	10 26 15.38	21.498	13 33 10.8	99.73
22	8 43 47.42	22.051	19 44 3.2	55.79	22	10 28 24.33	21.484	13 23 10.1	100.49
23	8 45 59.71	22.044	N.19 38 25.3	56.85	23	10 30 33.19	21.471	N.13 13 4.9	101.24
THURSDAY 14.					SATURDAY 16.				
0	8 48 11.95	22.037	N.19 32 41.0	57.91	0	10 32 41.98	21.458	N.13 2 55.2	101.99
1	8 50 24.15	22.029	19 26 50.4	58.96	1	10 34 50.69	21.445	12 52 41.0	102.73
2	8 52 36.30	22.021	19 20 53.5	60.01	2	10 36 59.32	21.433	12 42 22.4	103.46
3	8 54 48.40	22.013	19 14 50.3	61.06	3	10 39 7.88	21.420	12 31 59.5	104.18
4	8 57 0.46	22.005	19 8 40.8	62.09	4	10 41 16.36	21.407	12 21 32.2	104.90
5	8 59 12.46	21.996	19 2 25.2	63.13	5	10 43 24.76	21.394	12 11 0.7	105.60
6	9 1 24.41	21.987	18 56 3.3	64.15	6	10 45 33.09	21.382	12 0 25.0	106.29
7	9 3 36.30	21.978	18 49 35.3	65.18	7	10 47 41.34	21.369	11 49 45.2	106.98
8	9 5 48.14	21.968	18 43 1.1	66.21	8	10 49 49.52	21.358	11 39 1.3	107.66
9	9 7 59.91	21.958	18 36 20.8	67.23	9	10 51 57.63	21.346	11 28 13.3	108.33
10	9 10 11.63	21.948	18 29 34.4	68.24	10	10 54 5.67	21.334	11 17 21.4	108.98
11	9 12 23.29	21.938	18 22 41.9	69.24	11	10 56 13.64	21.323	11 6 25.5	109.63
12	9 14 34.88	21.927	18 15 43.5	70.24	12	10 58 21.55	21.313	10 55 25.8	110.27
13	9 16 46.41	21.916	18 8 39.0	71.24	13	11 0 29.39	21.301	10 44 22.3	110.90
14	9 18 57.87	21.904	18 1 28.6	72.23	14	11 2 37.16	21.289	10 33 15.0	111.53
15	9 21 9.26	21.893	17 54 12.2	73.23	15	11 4 44.86	21.278	10 22 4.0	112.14
16	9 23 20.59	21.882	17 46 49.9	74.20	16	11 6 52.50	21.268	10 10 49.3	112.74
17	9 25 31.84	21.870	17 39 21.8	75.18	17	11 9 0.08	21.258	9 59 32.1	113.33
18	9 27 43.03	21.858	17 31 47.8	76.15	18	11 11 7.60	21.248	9 48 9.4	113.91
19	9 29 54.14	21.846	17 24 8.0	77.11	19	11 13 15.06	21.239	9 36 44.2	114.48
20	9 32 5.18	21.833	17 16 22.5	78.06	20	11 15 22.47	21.230	9 25 15.6	115.05
21	9 34 16.14	21.821	17 8 31.3	79.01	21	11 17 29.82	21.221	9 13 43.6	115.60
22	9 36 27.03	21.809	17 0 34.4	79.96	22	11 19 37.12	21.212	9 2 8.4	116.14
23	9 38 37.85	21.796	16 52 31.8	80.90	23	11 21 44.36	21.203	8 50 29.9	116.68
24	9 40 48.58	21.783	N.16 44 23.6	81.83	24	11 23 51.55	21.195	N.8 38 48.3	117.19

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 17.					TUESDAY 19.				
0	11 23 51.55	21.195	N. 8 38 48.3	117.19	0	13 52 3.17	21.280	S. 1 23 46.1	129.63
1	11 25 58.70	21.188	8 27 3.6	117.71	1	13 7 30.89	21.293	1 36 43.8	129.61
2	11 28 5.80	21.180	8 15 15.8	118.21	2	13 9 38.69	21.307	1 49 41.4	129.58
3	11 30 12.86	21.173	8 3 25.1	118.70	3	13 11 46.57	21.321	2 2 38.7	129.53
4	11 32 19.87	21.166	7 51 31.4	119.19	4	13 13 54.54	21.337	2 15 35.7	129.48
5	11 34 26.85	21.159	7 39 34.8	119.66	5	13 16 2.61	21.353	2 28 32.4	129.42
6	11 36 33.78	21.153	7 27 35.5	120.11	6	13 18 10.78	21.369	2 41 28.7	129.33
7	11 38 40.68	21.148	7 15 33.5	120.57	7	13 20 19.04	21.385	2 54 24.4	129.24
8	11 40 47.55	21.143	7 3 28.7	121.01	8	13 22 27.40	21.403	3 7 19.6	129.14
9	11 42 54.39	21.137	6 51 21.4	121.43	9	13 24 35.87	21.420	3 20 14.1	129.03
10	11 45 1.19	21.132	6 39 11.5	121.86	10	13 26 44.44	21.438	3 33 7.9	128.90
11	11 47 7.97	21.128	6 26 59.1	122.27	11	13 28 53.13	21.458	3 46 0.9	128.77
12	11 49 14.72	21.123	6 14 44.3	122.66	12	13 31 1.93	21.477	3 58 53.1	128.62
13	11 51 21.45	21.120	6 2 27.2	123.04	13	13 33 10.85	21.496	4 11 44.3	128.44
14	11 53 28.16	21.117	5 50 7.8	123.42	14	13 35 19.88	21.516	4 24 34.4	128.27
15	11 55 34.85	21.114	5 37 46.1	123.79	15	13 37 29.04	21.538	4 37 23.5	128.09
16	11 57 41.53	21.112	5 25 22.3	124.14	16	13 39 38.33	21.559	4 50 11.5	127.89
17	11 59 48.19	21.109	5 12 56.4	124.49	17	13 41 47.75	21.581	5 2 58.2	127.68
18	12 1 54.84	21.108	5 0 28.4	124.83	18	13 43 57.30	21.603	5 15 43.6	127.45
19	12 4 1.49	21.108	4 47 58.5	125.14	19	13 46 6.99	21.627	5 28 27.6	127.21
20	12 6 8.13	21.107	4 35 26.7	125.46	20	13 48 16.82	21.650	5 41 10.1	126.97
21	12 8 14.77	21.107	4 22 53.0	125.77	21	13 50 26.79	21.674	5 53 51.2	126.71
22	12 10 21.41	21.107	4 10 17.5	126.06	22	13 52 36.91	21.698	6 6 30.6	126.43
23	12 12 28.05	21.107	N. 3 57 40.3	126.33	23	13 54 47.17	21.723	S. 6 19 8.3	126.15
MONDAY 18.					WEDNESDAY 20.				
0	12 14 34.69	21.108	N. 3 45 1.5	126.60	0	13 56 57.59	21.749	S. 6 31 44.4	125.86
1	12 16 41.34	21.110	3 32 21.1	126.86	1	13 59 8.16	21.776	6 44 18.6	125.54
2	12 18 48.01	21.113	3 19 39.2	127.10	2	14 1 18.89	21.802	6 56 50.9	125.22
3	12 20 54.69	21.114	3 6 55.9	127.33	3	14 3 29.78	21.829	7 9 21.2	124.88
4	12 23 1.38	21.117	2 54 11.2	127.55	4	14 5 40.84	21.857	7 21 49.5	124.53
5	12 25 8.09	21.121	2 41 25.2	127.77	5	14 7 52.06	21.884	7 34 15.6	124.18
6	12 27 14.83	21.125	2 28 38.0	127.97	6	14 10 3.45	21.913	7 46 39.6	123.81
7	12 29 21.59	21.129	2 15 49.6	128.16	7	14 12 15.01	21.942	7 59 1.3	123.42
8	12 31 28.38	21.133	2 3 0.1	128.34	8	14 14 26.75	21.972	8 11 20.6	123.02
9	12 33 35.19	21.138	1 50 9.5	128.51	9	14 16 38.67	22.002	8 23 37.5	122.61
10	12 35 42.04	21.145	1 37 18.0	128.67	10	14 18 50.77	22.032	8 35 51.9	122.19
11	12 37 48.93	21.152	1 24 25.5	128.81	11	14 21 3.05	22.063	8 48 3.8	121.75
12	12 39 55.86	21.158	1 11 32.3	128.93	12	14 23 15.52	22.093	9 0 12.9	121.29
13	12 42 2.83	21.166	0 58 38.3	129.06	13	14 25 28.17	22.125	9 12 19.3	120.84
14	12 44 9.85	21.173	0 45 43.6	129.17	14	14 27 41.02	22.158	9 24 23.0	120.38
15	12 46 16.91	21.182	0 32 48.3	129.27	15	14 29 54.07	22.191	9 36 23.8	119.88
16	12 48 24.03	21.191	0 19 52.4	129.35	16	14 32 7.31	22.223	9 48 21.6	119.38
17	12 50 31.20	21.199	N. 0 6 56.1	129.43	17	14 34 20.75	22.257	10 0 16.3	118.87
18	12 52 38.42	21.209	S. 0 6 0.7	129.49	18	14 36 34.39	22.291	10 12 8.0	118.35
19	12 54 45.71	21.220	0 18 57.8	129.54	19	14 38 48.24	22.325	10 23 56.5	117.81
20	12 56 53.06	21.231	0 31 55.2	129.58	20	14 41 2.29	22.360	10 35 41.7	117.26
21	12 59 0.48	21.243	0 44 52.8	129.61	21	14 43 16.56	22.396	10 47 23.6	116.70
22	13 1 7.97	21.254	0 57 50.5	129.63	22	14 45 31.04	22.431	10 59 2.1	116.12
23	13 3 15.53	21.267	1 10 48.3	129.63	23	14 47 45.73	22.467	11 10 37.0	115.53
24	13 5 23.17	21.280	S. 1 23 46.1	129.63	24	14 50 0.64	22.503	S. 11 22 8.4	114.93

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 21.					SATURDAY 23.				
0	14 50 0 ^h 64 ^m	22 ^s 503	S. 11 22 8 ^o 4 [']	114 ^{''} 93	0	16 42 38 ^h 28 ^m	24 ^s 445	S. 19 0 26 ^o 7 [']	71 ^{''} 30
1	14 52 15 ^h 77 ^m	22 ^s 540	11 33 36 ^o 2 [']	114 ^{''} 32	1	16 45 5 ^h 07 ^m	24 ^s 484	19 7 30 ^o 9 [']	70 ^{''} 09
2	14 54 31 ^h 12 ^m	22 ^s 577	11 45 0 ^o 2 [']	113 ^{''} 69	2	16 47 32 ^h 09 ^m	24 ^s 522	19 14 27 ^o 8 [']	68 ^{''} 88
3	14 56 46 ^h 69 ^m	22 ^s 614	11 56 20 ^o 5 [']	113 ^{''} 06	3	16 49 59 ^h 33 ^m	24 ^s 559	19 21 17 ^o 5 [']	67 ^{''} 67
4	14 59 2 ^h 49 ^m	22 ^s 652	12 7 36 ^o 9 [']	112 ^{''} 40	4	16 52 26 ^h 80 ^m	24 ^s 596	19 27 59 ^o 8 [']	66 ^{''} 43
5	15 1 18 ^h 51 ^m	22 ^s 689	12 18 49 ^o 3 [']	111 ^{''} 73	5	16 54 54 ^h 48 ^m	24 ^s 633	19 34 34 ^o 7 [']	65 ^{''} 19
6	15 3 34 ^h 76 ^m	22 ^s 728	12 29 57 ^o 7 [']	111 ^{''} 05	6	16 57 22 ^h 39 ^m	24 ^s 669	19 41 2 ^o 1 [']	63 ^{''} 94
7	15 5 51 ^h 25 ^m	22 ^s 768	12 41 1 ^o 9 [']	110 ^{''} 36	7	16 59 50 ^h 51 ^m	24 ^s 705	19 47 22 ^o 0 [']	62 ^{''} 68
8	15 8 7 ^h 92 ^m	22 ^s 806	12 52 2 ^o 0 [']	109 ^{''} 67	8	17 2 18 ^h 85 ^m	24 ^s 741	19 53 34 ^o 3 [']	61 ^{''} 41
9	15 10 24 ^h 9 ^m	22 ^s 845	13 2 57 ^o 9 [']	108 ^{''} 95	9	17 4 47 ^h 40 ^m	24 ^s 775	19 59 38 ^o 9 [']	60 ^{''} 13
10	15 12 42 ^h 11 ^m	22 ^s 885	13 13 49 ^o 4 [']	108 ^{''} 22	10	17 7 16 ^h 15 ^m	24 ^s 808	20 5 35 ^o 9 [']	58 ^{''} 85
11	15 14 59 ^h 54 ^m	22 ^s 924	13 24 36 ^o 5 [']	107 ^{''} 47	11	17 9 45 ^h 10 ^m	24 ^s 843	20 11 25 ^o 1 [']	57 ^{''} 55
12	15 17 17 ^h 20 ^m	22 ^s 963	13 35 19 ^o 0 [']	106 ^{''} 71	12	17 12 14 ^h 26 ^m	24 ^s 877	20 17 6 ^o 5 [']	56 ^{''} 24
13	15 19 35 ^h 10 ^m	23 ^s 004	13 45 57 ^o 0 [']	105 ^{''} 95	13	17 14 43 ^h 62 ^m	24 ^s 908	20 22 40 ^o 0 [']	54 ^{''} 93
14	15 21 53 ^h 25 ^m	23 ^s 045	13 56 30 ^o 4 [']	105 ^{''} 17	14	17 17 13 ^h 16 ^m	24 ^s 940	20 28 5 ^o 6 [']	53 ^{''} 60
15	15 24 11 ^h 64 ^m	23 ^s 085	14 6 59 ^o 0 [']	104 ^{''} 38	15	17 19 42 ^h 90 ^m	24 ^s 972	20 33 23 ^o 2 [']	52 ^{''} 26
16	15 26 30 ^h 27 ^m	23 ^s 126	14 17 22 ^o 9 [']	103 ^{''} 58	16	17 22 12 ^h 82 ^m	25 ^s 003	20 38 32 ^o 7 [']	50 ^{''} 92
17	15 28 49 ^h 15 ^m	23 ^s 168	14 27 41 ^o 9 [']	102 ^{''} 75	17	17 24 42 ^h 93 ^m	25 ^s 033	20 43 34 ^o 2 [']	49 ^{''} 58
18	15 31 8 ^h 28 ^m	23 ^s 208	14 37 55 ^o 9 [']	101 ^{''} 92	18	17 27 13 ^h 21 ^m	25 ^s 061	20 48 27 ^o 6 [']	48 ^{''} 22
19	15 33 27 ^h 65 ^m	23 ^s 249	14 48 4 ^o 9 [']	101 ^{''} 08	19	17 29 43 ^h 66 ^m	25 ^s 090	20 53 12 ^o 8 [']	46 ^{''} 85
20	15 35 47 ^h 27 ^m	23 ^s 291	14 58 8 ^o 8 [']	100 ^{''} 22	20	17 32 14 ^h 29 ^m	25 ^s 118	20 57 49 ^o 8 [']	45 ^{''} 48
21	15 38 7 ^h 14 ^m	23 ^s 333	15 8 7 ^o 5 [']	99 ^{''} 35	21	17 34 45 ^h 08 ^m	25 ^s 145	21 2 18 ^o 5 [']	44 ^{''} 09
22	15 40 27 ^h 27 ^m	23 ^s 375	15 18 1 ^o 0 [']	98 ^{''} 47	22	17 37 16 ^h 03 ^m	25 ^s 171	21 6 38 ^o 9 [']	42 ^{''} 71
23	15 42 47 ^h 64 ^m	23 ^s 416	S. 15 27 49 ^o 1 [']	97 ^{''} 58	23	17 39 47 ^h 13 ^m	25 ^s 197	S. 21 10 51 ^o 0 [']	41 ^{''} 31
FRIDAY 22.					SUNDAY 24.				
0	15 45 8 ^h 26 ^m	23 ^s 458	S. 15 37 31 ^o 9 [']	96 ^{''} 68	0	17 42 18 ^h 39 ^m	25 ^s 222	S. 21 14 54 ^o 6 [']	39 ^{''} 90
1	15 47 29 ^h 14 ^m	23 ^s 500	15 47 9 ^o 2 [']	95 ^{''} 75	1	17 44 49 ^h 79 ^m	25 ^s 245	21 18 49 ^o 8 [']	38 ^{''} 50
2	15 49 50 ^h 26 ^m	23 ^s 542	15 56 40 ^o 9 [']	94 ^{''} 82	2	17 47 21 ^h 33 ^m	25 ^s 268	21 22 36 ^o 6 [']	37 ^{''} 09
3	15 52 11 ^h 64 ^m	23 ^s 585	16 6 7 ^o 0 [']	93 ^{''} 88	3	17 49 53 ^h 01 ^m	25 ^s 291	21 26 14 ^o 9 [']	35 ^{''} 68
4	15 54 33 ^h 28 ^m	23 ^s 627	16 15 27 ^o 4 [']	92 ^{''} 92	4	17 52 24 ^h 82 ^m	25 ^s 313	21 29 44 ^o 7 [']	34 ^{''} 24
5	15 56 55 ^h 16 ^m	23 ^s 668	16 24 42 ^o 0 [']	91 ^{''} 95	5	17 54 56 ^h 76 ^m	25 ^s 333	21 33 5 ^o 8 [']	32 ^{''} 81
6	15 59 17 ^h 30 ^m	23 ^s 711	16 33 50 ^o 8 [']	90 ^{''} 97	6	17 57 28 ^h 82 ^m	25 ^s 353	21 36 18 ^o 4 [']	31 ^{''} 38
7	16 1 39 ^h 69 ^m	23 ^s 753	16 42 53 ^o 6 [']	89 ^{''} 98	7	18 0 0 ^h 99 ^m	25 ^s 371	21 39 22 ^o 3 [']	29 ^{''} 93
8	16 4 2 ^h 33 ^m	23 ^s 794	16 51 50 ^o 5 [']	88 ^{''} 98	8	18 2 33 ^h 27 ^m	25 ^s 389	21 42 17 ^o 5 [']	28 ^{''} 48
9	16 6 25 ^h 22 ^m	23 ^s 837	17 0 41 ^o 3 [']	87 ^{''} 96	9	18 5 5 ^h 66 ^m	25 ^s 407	21 45 4 ^o 0 [']	27 ^{''} 03
10	16 8 48 ^h 37 ^m	23 ^s 878	17 9 26 ^o 0 [']	86 ^{''} 93	10	18 7 38 ^h 15 ^m	25 ^s 423	21 47 41 ^o 8 [']	25 ^{''} 58
11	16 11 11 ^h 76 ^m	23 ^s 920	17 18 4 ^o 4 [']	85 ^{''} 88	11	18 10 10 ^h 73 ^m	25 ^s 438	21 50 10 ^o 9 [']	24 ^{''} 11
12	16 13 35 ^h 41 ^m	23 ^s 962	17 26 36 ^o 5 [']	84 ^{''} 83	12	18 12 43 ^h 40 ^m	25 ^s 452	21 52 31 ^o 1 [']	22 ^{''} 63
13	16 15 59 ^h 31 ^m	24 ^s 003	17 35 2 ^o 3 [']	83 ^{''} 77	13	18 15 16 ^h 15 ^m	25 ^s 465	21 54 42 ^o 5 [']	21 ^{''} 17
14	16 18 23 ^h 45 ^m	24 ^s 044	17 43 21 ^o 7 [']	82 ^{''} 68	14	18 17 48 ^h 08 ^m	25 ^s 477	21 56 45 ^o 1 [']	19 ^{''} 70
15	16 20 47 ^h 84 ^m	24 ^s 086	17 51 34 ^o 5 [']	81 ^{''} 59	15	18 20 21 ^h 87 ^m	25 ^s 488	21 58 38 ^o 9 [']	18 ^{''} 23
16	16 23 12 ^h 48 ^m	24 ^s 127	17 59 40 ^o 8 [']	80 ^{''} 50	16	18 22 54 ^h 83 ^m	25 ^s 498	22 0 23 ^o 8 [']	16 ^{''} 75
17	16 25 37 ^h 36 ^m	24 ^s 168	18 7 40 ^o 5 [']	79 ^{''} 39	17	18 25 27 ^h 84 ^m	25 ^s 507	22 1 59 ^o 9 [']	15 ^{''} 27
18	16 28 2 ^h 49 ^m	24 ^s 208	18 15 33 ^o 5 [']	78 ^{''} 26	18	18 28 0 ^h 91 ^m	25 ^s 516	22 3 27 ^o 0 [']	13 ^{''} 78
19	16 30 27 ^h 86 ^m	24 ^s 248	18 23 19 ^o 6 [']	77 ^{''} 13	19	18 30 34 ^h 03 ^m	25 ^s 523	22 4 45 ^o 2 [']	12 ^{''} 29
20	16 32 53 ^h 47 ^m	24 ^s 288	18 30 59 ^o 0 [']	75 ^{''} 98	20	18 33 7 ^h 18 ^m	25 ^s 528	22 5 54 ^o 5 [']	10 ^{''} 81
21	16 35 19 ^h 32 ^m	24 ^s 328	18 38 31 ^o 4 [']	74 ^{''} 83	21	18 35 40 ^h 37 ^m	25 ^s 533	22 6 54 ^o 9 [']	9 ^{''} 33
22	16 37 45 ^h 41 ^m	24 ^s 368	18 45 56 ^o 9 [']	73 ^{''} 66	22	18 38 13 ^h 58 ^m	25 ^s 538	22 7 46 ^o 4 [']	7 ^{''} 83
23	16 40 11 ^h 73 ^m	24 ^s 406	18 53 15 ^o 3 [']	72 ^{''} 48	23	18 40 46 ^h 82 ^m	25 ^s 541	22 8 28 ^o 9 [']	6 ^{''} 33
24	16 42 38 ^h 28 ^m	24 ^s 445	S. 19 0 26 ^o 7 [']	71 ^{''} 30	24	18 43 20 ^h 07 ^m	25 ^s 543	S. 22 9 2 ^o 4 [']	4 ^{''} 84

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 25.					WEDNESDAY 27.				
0	18 43 20.07	25.543	S. 22 9 2.4	4.84	0	20 44 13.51	24.473	S. 19 45 8.1	62.61
1	18 45 53.33	25.543	22 9 27.0	3.35	1	20 46 40.23	24.432	19 38 48.8	63.83
2	18 48 26.59	25.543	22 9 42.6	1.85	2	20 49 6.69	24.389	19 32 22.1	65.04
3	18 50 59.85	25.543	22 9 49.2	0.36	3	20 51 32.90	24.346	19 25 48.3	66.23
4	18 53 33.10	25.539	22 9 46.9	1.13	4	20 53 58.84	24.302	19 19 7.3	67.43
5	18 56 6.32	25.536	22 9 35.6	2.63	5	20 56 24.52	24.258	19 12 19.2	68.60
6	18 58 39.53	25.533	22 9 15.4	4.12	6	20 58 49.93	24.213	19 5 24.1	69.76
7	19 1 12.71	25.527	22 8 46.2	5.61	7	21 1 15.07	24.168	18 58 22.1	70.91
8	19 3 45.85	25.520	22 8 8.1	7.10	8	21 3 39.94	24.122	18 51 13.2	72.05
9	19 6 18.95	25.513	22 7 21.0	8.59	9	21 6 4.53	24.075	18 43 57.5	73.18
10	19 8 52.00	25.504	22 6 25.0	10.08	10	21 8 28.84	24.029	18 36 35.0	74.30
11	19 11 25.00	25.495	22 5 20.1	11.56	11	21 10 52.88	23.982	18 29 5.9	75.40
12	19 13 57.94	25.484	22 4 6.3	13.04	12	21 13 16.63	23.934	18 21 30.2	76.49
13	19 16 30.81	25.473	22 2 43.6	14.53	13	21 15 40.09	23.887	18 13 48.0	77.57
14	19 19 3.61	25.459	22 1 12.0	16.00	14	21 18 3.27	23.839	18 5 59.4	78.63
15	19 21 36.32	25.445	21 59 31.6	17.47	15	21 20 26.16	23.791	17 58 4.4	79.69
16	19 24 8.95	25.431	21 57 42.4	18.94	16	21 22 48.76	23.742	17 50 3.1	80.73
17	19 26 41.49	25.415	21 55 44.3	20.41	17	21 25 11.06	23.693	17 41 55.6	81.77
18	19 29 13.93	25.398	21 53 37.5	21.87	18	21 27 33.07	23.644	17 33 41.9	82.78
19	19 31 46.26	25.380	21 51 21.9	23.33	19	21 29 54.79	23.595	17 25 22.2	83.78
20	19 34 18.49	25.361	21 48 57.6	24.78	20	21 32 16.21	23.545	17 16 56.5	84.78
21	19 36 50.59	25.341	21 46 24.6	26.23	21	21 34 37.33	23.496	17 8 24.9	85.75
22	19 39 22.58	25.321	21 43 42.9	27.67	22	21 36 58.16	23.446	16 59 47.5	86.72
23	19 41 54.44	25.298	S. 21 40 52.6	29.10	23	21 39 18.68	23.395	S. 16 51 4.3	87.67
TUESDAY 26.					THURSDAY 28.				
0	19 44 26.16	25.275	S. 21 37 53.7	30.53	0	21 41 38.90	23.345	S. 16 42 15.5	88.60
1	19 46 57.74	25.252	21 34 46.2	31.96	1	21 43 58.82	23.295	16 33 21.1	89.53
2	19 49 29.18	25.228	21 31 30.2	33.38	2	21 46 18.44	23.244	16 24 21.2	90.44
3	19 52 0.47	25.202	21 28 5.6	34.80	3	21 48 37.75	23.193	16 15 15.8	91.34
4	19 54 31.60	25.174	21 24 32.6	36.20	4	21 50 56.76	23.143	16 6 5.1	92.23
5	19 57 2.56	25.147	21 20 51.2	37.60	5	21 53 15.47	23.093	15 56 49.1	93.10
6	19 59 33.36	25.119	21 17 1.4	38.99	6	21 55 33.87	23.042	15 47 27.9	93.96
7	20 2 3.99	25.090	21 13 3.3	40.38	7	21 57 51.97	22.992	15 38 1.6	94.80
8	20 4 34.44	25.060	21 8 56.9	41.75	8	22 0 9.77	22.941	15 28 30.3	95.63
9	20 7 4.71	25.028	21 4 42.3	43.12	9	22 2 27.26	22.889	15 18 54.0	96.45
10	20 9 34.78	24.997	21 0 19.5	44.48	10	22 4 44.44	22.838	15 9 12.9	97.26
11	20 12 4.67	24.964	20 55 48.5	45.84	11	22 7 1.32	22.788	14 59 26.9	98.05
12	20 14 34.35	24.930	20 51 9.4	47.18	12	22 9 17.90	22.738	14 49 36.3	98.83
13	20 17 3.83	24.897	20 46 22.3	48.53	13	22 11 34.17	22.687	14 39 41.0	99.59
14	20 19 33.11	24.862	20 41 27.1	49.86	14	22 13 50.14	22.637	14 29 41.2	100.34
15	20 22 2.17	24.826	20 36 24.0	51.17	15	22 16 5.81	22.586	14 19 36.9	101.08
16	20 24 31.02	24.790	20 31 13.1	52.48	16	22 18 21.17	22.535	14 9 28.2	101.80
17	20 26 59.65	24.753	20 25 54.3	53.78	17	22 20 36.23	22.485	13 59 15.3	102.51
18	20 29 28.05	24.714	20 20 27.7	55.08	18	22 22 50.99	22.435	13 48 58.1	103.22
19	20 31 56.22	24.676	20 14 53.4	56.36	19	22 25 5.45	22.386	13 38 36.7	103.90
20	20 34 24.16	24.638	20 9 11.4	57.63	20	22 27 19.62	22.336	13 28 11.3	104.57
21	20 36 51.87	24.598	20 3 21.8	58.89	21	22 29 33.48	22.285	13 17 41.9	105.23
22	20 39 19.33	24.557	19 57 24.7	60.14	22	22 31 47.04	22.236	13 7 8.6	105.87
23	20 41 46.55	24.515	19 51 20.1	61.38	23	22 34 0.31	22.188	12 56 31.5	106.49
24	20 44 13.51	24.473	S. 19 45 8.1	62.61	24	22 36 13.29	22.138	S. 12 45 50.7	107.11

MEAN TIME.

PHASES OF THE MOON.

[illegible]

Feb.	9	(Apogee	- - - - -	h
	24	(Perigee	- - - - -	I

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
2	SUN W.	27 41 41	2823	29 15 36	2843	30 49 10	2859	32 22 22	2875
	α Arietis E.	56 19 44	2704	54 43 10	2730	53 7 10	2757	51 31 46	2785
	Aldebaran E.	86 32 54	2481	84 51 14	2497	83 9 56	2513	81 29 1	2530
3	SUN W.	40 2 52	2963	41 33 51	2980	43 4 29	2998	44 34 44	3017
	α Arietis E.	43 44 32	2949	42 13 15	2988	40 42 47	3029	39 13 10	3073
	Aldebaran E.	73 10 10	2612	71 31 32	2629	69 53 17	2646	68 15 24	2663
	Pollux E.	117 16 10	2646	115 38 18	2661	114 0 46	2678	112 23 36	2693
4	SUN W.	52 0 33	3103	53 28 39	3119	54 56 25	3137	56 23 50	3153
	Mars W.	18 8 20	3101	19 36 29	3105	21 4 33	3112	22 32 28	3120
	α Arietis E.	32 0 8	3361	30 37 7	3438	29 15 34	3525	27 55 37	3623
	Aldebaran E.	60 11 32	2744	58 35 50	2760	57 0 29	2775	55 25 28	2790
	Pollux E.	104 22 57	2771	102 47 51	2786	101 13 5	2801	99 38 38	2816
5	SUN W.	63 36 9	3231	65 1 42	3246	66 26 57	3259	67 51 56	3273
	Mars W.	29 49 12	3173	31 15 53	3185	32 42 20	3196	34 8 34	3208
	Aldebaran E.	47 35 18	2862	46 2 11	2877	44 29 23	2891	42 56 52	2903
	Pollux E.	91 51 11	2887	90 18 36	2901	88 46 18	2914	87 14 17	2927
	Saturn E.	116 28 41	2831	114 54 54	2845	113 21 24	2858	111 48 11	2870
6	SUN W.	74 52 56	3337	76 16 25	3348	77 39 41	3359	79 2 44	3369
	Mars W.	41 16 22	3262	42 41 18	3272	44 6 2	3282	45 30 34	3291
	Venus W.	29 9 44	3436	30 31 20	3441	31 52 50	3447	33 14 13	3453
	Aldebaran E.	35 18 16	2964	33 47 18	2974	32 16 33	2985	30 46 2	2996
	Pollux E.	79 38 6	2986	78 7 36	2997	76 37 19	3007	75 7 15	3017
	Saturn E.	104 6 0	2928	102 34 17	2939	101 2 47	2948	99 31 29	2958
7	SUN W.	85 55 15	3414	87 17 16	3422	88 39 8	3428	90 0 53	3434
	Mars W.	52 30 45	3332	53 54 20	3338	55 17 48	3345	56 41 8	3350
	Venus W.	39 59 33	3481	41 20 18	3486	42 40 58	3490	44 1 33	3495
	Pollux E.	67 39 48	3060	66 10 50	3068	64 42 1	3075	63 13 21	3082
	Saturn E.	91 57 47	2997	90 27 31	3005	88 57 24	3011	87 27 25	3017
	Regulus E.	103 24 15	3032	101 54 42	3038	100 25 16	3045	98 55 59	3050
8	SUN W.	96 48 3	3458	98 9 14	3461	99 30 22	3463	100 51 27	3466
	Mars W.	63 36 23	3371	64 59 13	3373	66 22 0	3376	67 44 44	3378
	Venus W.	50 43 24	3510	52 3 37	3513	53 23 47	3514	54 43 56	3514
	α Arietis W.	25 2 16	4032	26 13 24	3937	27 26 6	3856	28 40 10	3788
	Pollux E.	55 51 53	3109	54 23 54	3114	52 56 1	3118	51 28 13	3121
	Saturn E.	79 59 2	3038	78 29 36	3040	77 0 13	3043	75 30 53	3045
	Regulus E.	91 31 3	3072	90 2 19	3073	88 33 37	3076	87 4 58	3078
9	SUN W.	107 36 29	3468	108 57 29	3467	110 18 30	3466	111 39 32	3463
	Mars W.	74 38 6	3379	76 0 47	3378	77 23 29	3375	78 46 14	3373
	Venus W.	61 24 38	3512	62 44 49	3510	64 5 2	3507	65 25 18	3505
	α Arietis W.	35 5 49	3550	36 25 18	3516	37 45 24	3487	39 6 3	3459
	Pollux E.	44 10 12	3136	42 42 46	3138	41 15 22	3141	39 48 2	3143
	Saturn E.	68 4 35	3046	66 35 19	3045	65 6 2	3043	63 36 43	3042
	Regulus E.	79 42 7	3080	78 13 33	3079	76 44 58	3077	75 16 20	3076
10	SUN W.	118 25 32	3446	119 46 56	3441	121 8 26	3437	122 30 2	3431
	Mars W.	85 40 45	3356	87 3 52	3351	88 27 5	3345	89 50 25	3339
	Venus W.	72 7 33	3484	73 28 15	3479	74 49 3	3473	76 9 57	3467

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
2	SUN W.	33 55 13	2893	35 27 41	2910	36 59 47	2927	38 31 31	2946
	α Arietis E.	49 56 59	2815	48 22 50	2845	46 49 21	2879	45 16 35	2912
	Aldebaran E.	79 48 29	2546	78 8 20	2563	76 28 34	2580	74 49 11	2596
3	SUN W.	46 4 36	3033	47 34 8	3052	49 3 17	3069	50 32 5	3085
	α Arietis E.	37 44 28	3121	36 16 44	3173	34 50 2	3231	33 24 29	3292
	Aldebaran E.	66 37 54	2679	65 0 46	2696	63 24 0	2711	61 47 35	2728
	Pollux E.	110 46 47	2708	109 10 18	2725	107 34 11	2740	105 58 24	2755
4	SUN W.	57 50 56	3168	59 17 43	3185	60 44 10	3200	62 10 19	3216
	Mars W.	24 0 13	3129	25 27 48	3140	26 55 9	3151	28 22 17	3162
	α Arietis E.	26 37 28	3736	25 21 19	3867	24 7 26	4019	22 56 5	4200
	Aldebaran E.	53 50 47	2805	52 16 26	2820	50 42 24	2835	49 8 42	2849
	Pollux E.	98 4 31	2831	96 30 43	2845	94 57 14	2860	93 24 4	2873
5	SUN W.	69 16 39	3288	70 41 5	3300	72 5 17	3313	73 29 13	3325
	Mars W.	35 34 34	3220	37 0 20	3230	38 25 54	3242	39 51 14	3252
	Aldebaran E.	41 24 37	2916	39 52 39	2928	38 20 56	2941	36 49 29	2952
	Pollux E.	85 42 32	2939	84 11 3	2952	82 39 50	2963	81 8 51	2974
	Saturn E.	110 15 14	2883	108 42 33	2895	107 10 8	2906	105 37 57	2917
6	SUN W.	80 25 36	3379	81 48 16	3388	83 10 46	3398	84 33 5	3406
	Mars W.	46 54 56	3300	48 19 8	3308	49 43 10	3317	51 7 2	3325
	Venus W.	34 35 30	3459	35 56 40	3464	37 17 44	3471	38 38 41	3475
	Aldebaran E.	29 15 44	3005	27 45 38	3016	26 15 45	3025	24 46 3	3035
	Pollux E.	73 37 23	3026	72 7 43	3035	70 38 14	3044	69 8 56	3052
	Saturn E.	98 0 23	2966	96 29 28	2976	94 58 45	2983	93 28 11	2991
7	SUN W.	91 22 31	3440	92 44 2	3446	94 5 27	3450	95 26 47	3454
	Mars W.	58 4 22	3355	59 27 30	3359	60 50 33	3365	62 13 30	3368
	Venus W.	45 22 3	3498	46 42 29	3502	48 2 51	3506	49 23 9	3508
	Pollux E.	61 44 49	3088	60 16 25	3094	58 48 8	3099	57 19 57	3105
	Saturn E.	85 57 33	3022	84 27 47	3026	82 58 7	3030	81 28 32	3034
	Regulus E.	97 26 48	3056	95 57 44	3060	94 28 45	3065	92 59 52	3068
8	SUN W.	102 12 29	3467	103 33 30	3468	104 54 30	3469	106 15 29	3468
	Mars W.	69 7 26	3379	70 30 7	3379	71 52 47	3380	73 15 26	3379
	Venus W.	56 4 5	3514	57 24 13	3515	58 44 20	3514	60 4 28	3513
	α Arietis W.	29 55 25	3727	31 11 43	3675	32 28 57	3628	33 47 1	3587
	Pollux E.	50 0 29	3124	48 32 49	3128	47 5 13	3131	45 37 41	3133
	Saturn E.	74 1 36	3046	72 32 20	3046	71 3 4	3047	69 33 50	3047
	Regulus E.	85 36 22	3080	84 7 48	3080	82 39 14	3081	81 10 41	3080
9	SUN W.	113 0 38	3461	114 21 46	3458	115 42 57	3454	117 4 12	3450
	Mars W.	80 9 1	3371	81 31 51	3367	82 54 45	3364	84 17 43	3360
	Venus W.	66 45 37	3502	68 5 59	3498	69 26 25	3494	70 46 56	3488
	α Arietis W.	40 27 13	3433	41 48 52	3410	43 10 57	3388	44 33 27	3367
	Pollux E.	38 20 45	3146	36 53 31	3148	35 26 19	3152	33 59 12	3154
	Saturn E.	62 7 22	3039	60 37 58	3036	59 8 30	3033	57 38 58	3030
	Regulus E.	73 47 41	3073	72 18 58	3070	70 50 12	3067	69 21 22	3064
10	SUN W.	123 51 44	3425	125 13 32	3418	126 35 28	3411	127 57 32	3404
	Mars W.	91 13 51	3333	92 37 24	3327	94 1 4	3319	95 24 53	3313
	Venus W.	77 30 58	3460	78 52 7	3453	80 13 24	3446	81 34 49	3438

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
10	α Arietis W.	45 56 21	3348	47 19 37	3330	48 43 14	3313	50 7 11	3295
	Pollux E.	32 32 8	3158	31 5 9	3164	29 38 17	3169	28 11 31	3177
	Saturn E.	56 9 22	3026	54 39 41	3021	53 9 54	3015	51 40 0	3011
	Regulus E.	67 52 28	3060	66 23 29	3054	64 54 23	3050	63 25 12	3045
11	Mars W.	96 48 50	3306	98 12 55	3297	99 37 10	3289	101 1 34	3280
	Venus W.	82 56 23	3431	84 18 5	3422	85 39 57	3413	87 1 59	3403
	α Arietis W.	57 11 39	3219	58 37 26	3204	60 3 30	3191	61 29 50	3178
	Aldebaran W.	24 22 29	3020	25 52 17	3010	27 22 17	3002	28 52 27	2993
	Saturn E.	44 8 47	2978	42 38 7	2972	41 7 19	2964	39 36 21	2956
	Regulus E.	55 57 31	3014	54 27 35	3006	52 57 30	2998	51 27 15	2991
	Spica E.	109 50 34	3046	108 21 18	3037	106 51 51	3029	105 22 14	3021
12	Venus W.	93 54 49	3355	95 17 57	3345	96 41 17	3334	98 4 49	3323
	α Arietis W.	68 45 35	3111	70 13 31	3097	71 41 44	3084	73 10 13	3073
	Aldebaran W.	36 26 15	2945	37 57 37	2935	39 29 11	2924	41 0 59	2915
	Saturn E.	31 58 54	2913	30 26 51	2903	28 54 36	2894	27 22 9	2884
	Regulus E.	43 53 30	2949	42 22 13	2939	40 50 44	2931	39 19 4	2921
	Spica E.	97 51 22	2974	96 20 37	2964	94 49 39	2954	93 18 28	2944
13	Venus W.	105 5 42	3267	106 30 32	3256	107 55 35	3244	109 20 52	3232
	α Arietis W.	80 36 24	3010	82 6 24	2998	83 36 39	2986	85 7 9	2974
	Aldebaran W.	48 43 18	2860	50 16 28	2850	51 49 51	2838	53 23 29	2827
	Regulus E.	31 37 45	2875	30 4 54	2866	28 31 51	2856	26 58 36	2848
	Spica E.	85 39 20	2891	84 6 50	2881	82 34 7	2870	81 1 10	2859
14	α Arietis W.	92 43 18	2918	94 15 14	2908	95 47 23	2897	97 19 46	2887
	Aldebaran W.	61 15 19	2770	62 50 26	2760	64 25 47	2748	66 1 23	2737
	Pollux W.	18 8 8	3059	19 37 8	3006	21 7 13	2961	22 38 15	2923
	Spica E.	73 12 56	2806	71 38 36	2795	70 4 2	2785	68 29 14	2774
15	α Arietis W.	105 4 47	2841	106 38 22	2832	108 12 8	2825	109 46 3	2818
	Aldebaran W.	74 3 7	2681	75 40 13	2670	77 17 33	2660	78 55 7	2649
	Pollux W.	30 23 48	2788	31 58 32	2767	33 33 43	2748	35 9 19	2730
	Spica E.	60 31 54	2725	58 55 48	2716	57 19 29	2707	55 42 58	2698
	Antares E.	106 25 55	2725	104 49 48	2713	103 13 26	2702	101 36 49	2691
16	Aldebaran W.	87 6 32	2598	88 45 30	2588	90 24 42	2578	92 4 7	2568
	Pollux W.	43 12 49	2655	44 50 30	2642	46 28 28	2629	48 6 44	2616
	Saturn W.	19 5 34	2575	20 45 3	2565	22 24 46	2555	24 4 43	2545
	Spica E.	47 37 39	2660	46 0 6	2655	44 22 25	2649	42 44 36	2644
	Antares E.	93 30 4	2638	91 52 0	2628	90 13 43	2618	88 35 13	2609
17	Pollux W.	56 22 3	2561	58 1 51	2551	59 41 53	2542	61 22 8	2533
	Saturn W.	32 27 51	2498	34 9 7	2490	35 50 35	2482	37 32 14	2473
	Regulus W.	20 21 46	2558	22 1 39	2544	23 41 51	2533	25 22 19	2521
	Spica E.	34 34 20	2635	32 56 12	2638	31 18 8	2621	29 40 9	2618
	Antares E.	80 19 36	2565	78 39 53	2557	76 59 59	2550	75 19 55	2543
	Jupiter E.	103 41 53	2577	102 2 26	2569	100 22 48	2560	98 42 58	2552
18	Pollux W.	69 46 28	2490	71 27 55	2483	73 9 32	2475	74 51 20	2469
	Saturn W.	46 3 18	2435	47 46 3	2429	49 28 57	2422	51 12 1	2415
	Regulus W.	33 48 20	2474	35 30 10	2465	37 12 12	2458	38 54 25	2450

MEAN TIME.										
LUNAR DISTANCES.										
Day.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
10	α Arietis	W.	51 31 28	3280	52 56 3	3263	54 20 58	3248	55 46 10	3234
	Pollux	E.	26 44 54	3187	25 18 29	3198	23 52 17	3213	22 26 23	3233
	Saturn	E.	50 10 1	3005	48 39 54	2999	47 9 40	2992	45 39 17	2986
	Regulus	E.	61 55 55	3039	60 26 30	3034	58 56 59	3026	57 27 19	3020
11	Mars	W.	102 26 9	3272	103 50 53	3263	105 15 48	3253	106 40 54	3243
	Venus	W.	88 24 12	3394	89 46 35	3386	91 9 8	3375	92 31 53	3365
	α Arietis	W.	62 56 26	3163	64 23 19	3150	65 50 28	3136	67 17 54	3124
	Aldebaran	W.	30 22 49	2984	31 53 22	2973	33 24 8	2965	34 55 5	2954
	Saturn	E.	38 5 13	2947	36 33 54	2939	35 2 25	2931	33 30 45	2922
	Regulus	E.	49 56 51	2983	48 26 17	2974	46 55 32	2966	45 24 37	2957
	Spica	E.	103 52 27	3011	102 22 28	3002	100 52 18	2993	99 21 56	2983
12	Venus	W.	99 28 34	3312	100 52 32	3301	102 16 42	3290	103 41 5	3278
	α Arietis	W.	74 38 56	3060	76 7 55	3047	77 37 9	3034	79 6 39	3022
	Aldebaran	W.	42 32 59	2904	44 5 13	2893	45 37 41	2882	47 10 23	2872
	Saturn	E.	25 49 30	2875	24 16 39	2865	22 43 35	2855	21 10 19	2845
	Regulus	E.	37 47 12	2912	36 15 8	2902	34 42 52	2894	33 10 25	2883
	Spica	E.	91 47 5	2934	90 15 29	2923	88 43 39	2912	87 11 36	2902
13	Venus	W.	110 46 23	3221	112 12 7	3209	113 38 5	3198	115 4 17	3187
	α Arietis	W.	86 37 54	2962	88 8 54	2951	89 40 8	2940	91 11 36	2929
	Aldebaran	W.	54 57 22	2816	56 31 29	2805	58 5 51	2793	59 40 28	2782
	Regulus	E.	25 25 11	2841	23 51 36	2832	22 17 50	2826	20 43 56	2820
	Spica	E.	79 27 59	2848	77 54 34	2838	76 20 55	2828	74 47 3	2816
14	α Arietis	W.	98 52 22	2877	100 25 10	2867	101 58 11	2859	103 31 23	2849
	Aldebaran	W.	67 37 14	2725	69 13 20	2714	70 49 41	2703	72 26 17	2692
	Pollux	W.	24 10 5	2889	25 42 38	2860	27 15 48	2834	28 49 32	2809
	Spica	E.	66 54 12	2764	65 18 57	2754	63 43 29	2744	62 7 48	2735
15	α Arietis	W.	111 20 8	2811	112 54 21	2805	114 28 43	2800	116 3 11	2795
	Aldebaran	W.	80 32 56	2638	82 10 59	2628	83 49 16	2618	85 27 47	2607
	Pollux	W.	36 45 19	2714	38 21 40	2698	39 58 23	2683	41 35 26	2668
	Spica	E.	54 6 16	2689	52 29 22	2682	50 52 18	2674	49 15 3	2667
	Antares	E.	99 59 57	2680	98 22 50	2669	96 45 28	2659	95 7 53	2649
16	Aldebaran	W.	93 43 46	2559	95 23 37	2550	97 3 41	2541	98 43 57	2532
	Pollux	W.	49 45 17	2604	51 24 6	2593	53 3 10	2583	54 42 29	2572
	Saturn	W.	25 44 54	2535	27 25 19	2525	29 5 57	2516	30 46 48	2507
	Spica	E.	41 6 41	2640	39 28 41	2637	37 50 36	2635	36 12 28	2635
	Antares	E.	86 56 30	2600	85 17 35	2591	83 38 27	2582	81 59 7	2574
17	Pollux	W.	63 2 36	2524	64 43 16	2515	66 24 9	2507	68 5 13	2499
	Saturn	W.	39 14 5	2465	40 56 7	2457	42 38 20	2450	44 20 44	2443
	Regulus	W.	27 3 3	2510	28 44 2	2500	30 25 15	2491	32 6 41	2482
	Spica	E.	28 2 19	2659	26 24 44	2673	24 47 28	2690	23 10 35	2715
	Antares	E.	73 39 41	2535	71 59 16	2529	70 18 43	2522	68 38 0	2515
	Jupiter	E.	97 2 57	2544	95 22 45	2536	93 42 22	2528	92 1 48	2520
18	Pollux	W.	76 33 17	2461	78 15 25	2455	79 57 41	2448	81 40 7	2443
	Saturn	W.	52 55 14	2408	54 38 37	2403	56 22 8	2396	58 5 48	2390
	Regulus	W.	40 36 49	2443	42 19 23	2436	44 2 6	2429	45 45 0	2423

MEAN TIME.										
LUNAR DISTANCES.										
Day.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
18	Antares	E.	66° 57' 8"	2510	65° 16' 9"	2504	63° 35' 1"	2499	61° 53' 46"	2494
	Jupiter	E.	90° 21' 3"	2514	88° 40' 9"	2506	86° 59' 4"	2499	85° 17' 50"	2492
19	Pollux	W.	83° 22' 41"	2436	85° 5' 24"	2431	86° 48' 15"	2425	88° 31' 14"	2419
	Saturn	W.	59° 49' 37"	2384	61° 33' 34"	2379	63° 17' 39"	2374	65° 1' 51"	2369
	Regulus	W.	47° 28' 2"	2417	49° 11' 13"	2410	50° 54' 33"	2404	52° 38' 2"	2399
	Antares	E.	53° 26' 1"	2476	51° 44' 14"	2474	50° 2' 24"	2472	48° 20' 31"	2470
	Jupiter	E.	76° 49' 21"	2462	75° 7' 14"	2455	73° 24' 58"	2450	71° 42' 35"	2445
	α Aquilæ	E.	100° 5' 4"	3053	98° 35' 57"	3043	97° 6' 37"	3033	95° 37' 5"	3025
	SUN	E.	135° 15' 11"	2750	133° 39' 38"	2744	132° 3' 57"	2737	130° 28' 6"	2731
20	Pollux	W.	97° 7' 57"	2396	98° 51' 37"	2392	100° 35' 23"	2388	102° 19' 15"	2384
	Saturn	W.	73° 44' 43"	2344	75° 29' 38"	2340	77° 14' 39"	2335	78° 59' 47"	2332
	Regulus	W.	61° 17' 18"	2373	63° 1' 31"	2369	64° 45' 50"	2364	66° 30' 16"	2359
	Antares	E.	39° 51' 2"	2477	38° 9' 16"	2480	36° 27' 35"	2487	34° 46' 3"	2494
	Jupiter	E.	63° 8' 48"	2420	61° 25' 42"	2415	59° 42' 29"	2411	57° 59' 10"	2407
	α Aquilæ	E.	88° 7' 7"	2996	86° 36' 49"	2994	85° 6' 29"	2993	83° 36' 7"	2993
	SUN	E.	122° 26' 56"	2704	120° 50' 21"	2698	119° 13' 38"	2693	117° 36' 49"	2689
21	Saturn	W.	87° 46' 51"	2313	89° 32' 32"	2309	91° 18' 18"	2306	93° 4' 9"	2302
	Regulus	W.	75° 13' 56"	2340	76° 58' 57"	2337	78° 44' 3"	2333	80° 29' 14"	2330
	Spica	W.	22° 15' 32"	2570	23° 55' 8"	2536	25° 35' 31"	2508	27° 16' 33"	2485
	Jupiter	E.	49° 21' 9"	2387	47° 37' 16"	2384	45° 53' 18"	2381	44° 9' 16"	2377
	α Aquilæ	E.	76° 4' 54"	3013	74° 34' 57"	3022	73° 5' 11"	3030	71° 35' 36"	3042
	SUN	E.	109° 31' 14"	2667	107° 53' 50"	2663	106° 16' 21"	2660	104° 38' 47"	2656
22	Regulus	W.	89° 16' 19"	2315	91° 1' 56"	2312	92° 47' 38"	2309	94° 33' 24"	2307
	Spica	W.	35° 48' 33"	2408	37° 31' 56"	2398	39° 15' 34"	2389	40° 59' 25"	2380
	Jupiter	E.	35° 27' 54"	2362	33° 43' 25"	2360	31° 58' 53"	2357	30° 14' 17"	2355
	α Aquilæ	E.	64° 11' 56"	3127	62° 44' 19"	3151	61° 17' 11"	3177	59° 50' 34"	3207
	SUN	E.	96° 29' 46"	2640	94° 51' 45"	2637	93° 13' 40"	2634	91° 35' 31"	2632
23	Spica	W.	49° 41' 18"	2349	51° 26' 6"	2345	53° 11' 0"	2341	54° 56' 0"	2337
	α Aquilæ	E.	52° 47' 39"	3411	51° 25' 35"	3467	50° 4' 34"	3529	48° 44' 42"	3597
	SUN	E.	83° 23' 58"	2620	81° 45' 30"	2618	80° 7' 0"	2617	78° 28' 28"	2615
24	Spica	W.	63° 42' 15"	2323	65° 27' 41"	2321	67° 13' 10"	2320	68° 58' 41"	2319
	Antares	W.	18° 52' 41"	2688	20° 29' 37"	2625	22° 7' 58"	2576	23° 47' 26"	2537
	SUN	E.	70° 15' 22"	2610	68° 36' 41"	2610	66° 58' 0"	2610	65° 19' 18"	2610
25	Spica	W.	77° 46' 33"	2317	79° 32' 8"	2317	81° 17' 42"	2318	83° 3' 15"	2319
	Antares	W.	32° 15' 24"	2426	33° 58' 21"	2415	35° 41' 34"	2405	37° 25' 2"	2397
	SUN	E.	57° 5' 59"	2614	55° 27' 23"	2616	53° 48' 50"	2618	52° 10' 20"	2620
26	Spica	W.	91° 50' 25"	2331	93° 35' 40"	2334	95° 20' 50"	2337	97° 5' 55"	2341
	Antares	W.	46° 4' 32"	2376	47° 48' 41"	2375	49° 32' 52"	2374	51° 17' 4"	2375
	Jupiter	W.	20° 38' 24"	2350	22° 23' 10"	2352	24° 7' 54"	2355	25° 52' 34"	2358
	SUN	E.	43° 58' 46"	2638	42° 20' 42"	2643	40° 42' 46"	2648	39° 4' 56"	2655
27	Spica	W.	105° 49' 44"	2366	107° 34' 7"	2373	109° 18' 20"	2380	111° 2' 24"	2387
	Antares	W.	59° 57' 37"	2385	61° 41' 33"	2389	63° 25' 24"	2394	65° 9' 8"	2398
	Jupiter	W.	34° 34' 35"	2380	36° 18' 39"	2384	38° 2' 37"	2391	39° 46' 25"	2396
	SUN	E.	30° 58' 5"	2693	29° 21' 16"	2704	27° 44' 41"	2716	26° 8' 23"	2729

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
18	Antares E.	60 12 25	2490	58 30 58	2485	56 49 24	2482	55 7 45	2478
	Jupiter E.	83 36 26	2486	81 54 53	2480	80 13 11	2473	78 31 20	2467
19	Pollux W.	90 14 21	2415	91 57 34	2410	93 40 55	2405	95 24 23	2401
	Saturn W.	66 46 11	2364	68 30 38	2358	70 15 13	2353	71 59 55	2349
	Regulus W.	54 21 38	2394	56 5 22	2389	57 49 13	2383	59 33 12	2378
	Antares E.	46 38 36	2470	44 56 41	2470	43 14 46	2471	41 32 52	2474
	Jupiter E.	70 0 4	2439	68 17 25	2435	66 34 40	2429	64 51 47	2425
	α Aquilæ E.	94 7 23	3017	92 37 31	3009	91 7 29	3004	89 37 21	2999
	SUN E.	128 52 7	2725	127 16 1	2719	125 39 47	2713	124 3 25	2708
20	Pollux W.	104 3 13	2380	105 47 16	2378	107 31 23	2374	109 15 35	2371
	Saturn W.	80 45 0	2328	82 30 19	2324	84 15 44	2320	86 1 15	2316
	Regulus W.	68 14 49	2356	69 59 27	2352	71 44 11	2348	73 29 1	2344
	Antares E.	33 4 42	2504	31 23 34	2516	29 42 43	2531	28 2 13	2551
	Jupiter E.	56 15 45	2403	54 32 14	2399	52 48 38	2395	51 4 56	2391
	α Aquilæ E.	82 5 46	2994	80 35 26	2998	79 5 11	3001	77 35 0	3005
	SUN E.	115 59 54	2684	114 22 53	2680	112 45 46	2675	111 8 33	2671
21	Saturn W.	94 50 5	2300	96 36 5	2296	98 22 10	2293	100 8 19	2290
	Regulus W.	82 14 30	2327	83 59 50	2324	85 45 15	2320	87 30 45	2317
	Spica W.	28 58 8	2465	30 40 11	2448	32 22 38	2433	34 5 26	2419
	Jupiter E.	42 25 8	2374	40 40 56	2371	38 56 39	2368	37 12 18	2366
	α Aquilæ E.	70 6 15	3056	68 37 11	3069	67 8 24	3087	65 39 58	3106
	SUN E.	103 1 8	2652	101 23 24	2649	99 45 36	2646	98 7 43	2643
22	Regulus W.	96 19 13	2304	98 5 6	2302	99 51 2	2300	101 37 1	2299
	Spica W.	42 43 28	2373	44 27 42	2366	46 12 6	2360	47 56 38	2355
	Jupiter E.	28 29 38	2354	26 44 57	2351	25 0 12	2350	23 15 25	2348
	α Aquilæ E.	58 24 33	2340	56 59 11	2376	55 34 31	2317	54 10 39	2362
	SUN E.	89 57 19	2629	88 19 3	2627	86 40 45	2624	85 2 23	2622
23	Spica W.	56 41 6	2333	58 26 17	2330	60 11 33	2328	61 56 52	2325
	α Aquilæ E.	47 26 4	3674	46 8 49	3760	44 53 5	3855	43 38 59	3961
	SUN E.	76 49 54	2614	75 11 18	2613	73 32 41	2612	71 54 2	2611
24	Spica W.	70 44 13	2317	72 29 47	2317	74 15 22	2316	76 0 58	2317
	Antares W.	25 27 48	2504	27 8 55	2480	28 50 37	2459	30 32 48	2441
	SUN E.	63 40 37	2610	62 1 56	2611	60 23 16	2612	58 44 37	2612
25	Spica W.	84 48 47	2321	86 34 16	2323	88 19 42	2325	90 5 5	2327
	Antares W.	39 8 41	2391	40 52 29	2385	42 36 25	2382	44 20 26	2378
	SUN E.	50 31 52	2624	48 53 29	2626	47 15 10	2629	45 36 55	2634
26	Spica W.	98 50 55	2346	100 35 48	2350	102 20 34	2355	104 5 13	2361
	Antares W.	53 1 14	2375	54 45 24	2377	56 29 32	2380	58 13 36	2382
	Jupiter W.	27 37 9	2362	29 21 39	2365	31 6 4	2369	32 50 23	2374
	SUN E.	37 27 15	2660	35 49 42	2668	34 12 19	2675	32 35 6	2684
27	Spica W.	112 46 18	2394	114 30 1	2403	116 13 32	2412	117 56 50	2419
	Antares W.	66 52 46	2403	68 36 16	2409	70 19 38	2415	72 2 51	2421
	Jupiter W.	41 30 6	2403	43 13 37	2410	44 56 58	2417	46 40 9	2424
	SUN E.	24 32 22	2744	22 56 40	2760	21 21 20	2780	19 46 26	2804

A'T APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Frid.	1	22 50 25.41	9.355	S. 7 23 23.0	57.12	1 5.39	12 28.00	0.500
Sat.	2	22 54 9.67	9.334	7 0 28.9	57.38	1 5.32	12 15.74	0.521
Sun.	3	22 57 53.43	9.314	6 37 28.9	57.62	1 5.25	12 2.99	0.541
Mon.	4	23 1 36.73	9.295	6 14 23.3	57.84	1 5.18	11 49.77	0.560
Tues.	5	23 5 19.57	9.276	5 51 12.7	58.05	1 5.12	11 36.10	0.579
Wed.	6	23 9 1.98	9.258	5 27 57.3	58.23	1 5.06	11 21.99	0.596
Thur.	7	23 12 43.97	9.241	5 4 37.6	58.40	1 5.00	11 7.47	0.614
Frid.	8	23 16 25.56	9.225	4 41 14.0	58.56	1 4.94	10 52.54	0.630
Sat.	9	23 20 6.76	9.209	4 17 46.9	58.69	1 4.89	10 37.24	0.645
Sun.	10	23 23 47.60	9.195	3 54 16.7	58.82	1 4.84	10 21.57	0.660
Mon.	11	23 27 28.10	9.181	3 30 43.7	58.92	1 4.79	10 5.56	0.674
Tues.	12	23 31 8.28	9.168	3 7 8.4	59.01	1 4.75	9 49.23	0.687
Wed.	13	23 34 48.15	9.156	2 43 31.1	59.09	1 4.71	9 32.59	0.699
Thur.	14	23 38 27.74	9.144	2 19 52.2	59.15	1 4.67	9 15.68	0.710
Frid.	15	23 42 7.07	9.134	1 56 12.0	59.19	1 4.64	8 58.51	0.720
Sat.	16	23 45 46.17	9.125	1 32 30.9	59.22	1 4.60	8 41.10	0.730
Sun.	17	23 49 25.06	9.117	1 8 49.3	59.24	1 4.57	8 23.48	0.738
Mon.	18	23 53 3.77	9.109	0 45 7.5	59.24	1 4.55	8 5.69	0.745
Tues.	19	23 56 42.31	9.103	S. 0 21 25.8	59.23	1 4.53	7 47.73	0.751
Wed.	20	0 0 20.73	9.099	N. 0 2 15.5	59.20	1 4.51	7 29.64	0.756
Thur.	21	0 3 59.04	9.095	0 25 56.0	59.16	1 4.49	7 11.45	0.760
Frid.	22	0 7 37.27	9.091	0 49 35.3	59.11	1 4.47	6 53.17	0.763
Sat.	23	0 11 15.43	9.089	1 13 13.3	59.04	1 4.46	6 34.84	0.765
Sun.	24	0 14 53.56	9.088	1 36 49.4	58.96	1 4.45	6 16.46	0.766
Mon.	25	0 18 31.66	9.088	2 0 23.4	58.86	1 4.45	5 58.06	0.767
Tues.	26	0 22 9.76	9.088	2 23 54.9	58.75	1 4.45	5 39.66	0.766
Wed.	27	0 25 47.87	9.089	2 47 23.4	58.62	1 4.45	5 21.27	0.766
Thur.	28	0 29 26.01	9.090	3 10 48.8	58.48	1 4.45	5 2.91	0.764
Frid.	29	0 33 4.20	9.093	3 34 10.5	58.32	1 4.46	4 44.60	0.762
Sat.	30	0 36 42.46	9.096	3 57 28.2	58.15	1 4.47	4 26.35	0.759
Sun.	31	0 40 20.79	9.099	4 20 41.6	57.96	1 4.48	4 8.18	0.755
Mon.	32	0 43 59.22	9.104	N. 4 43 50.3	57.76	1 4.50	3 50.11	0.751

*Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Frid.	1	22 50 23.46	S. 7 23 34.9	16 10.1	12 28.10	22 37 55.36
Sat.	2	22 54 7.76	7 0 40.6	16 9.8	12 15.85	22 41 51.91
Sun.	3	22 57 51.56	6 37 40.4	16 9.6	12 3.10	22 45 48.47
Mon.	4	23 1 34.90	6 14 34.7	16 9.3	11 49.88	22 49 45.02
Tues.	5	23 5 17.78	5 51 23.9	16 9.1	11 36.21	22 53 41.57
Wed.	6	23 9 0.23	5 28 8.3	16 8.8	11 22.10	22 57 38.12
Thur.	7	23 12 42.26	5 4 48.4	16 8.6	11 7.58	23 1 34.68
Frid.	8	23 16 23.88	4 41 24.6	16 8.3	10 52.65	23 5 31.23
Sat.	9	23 20 5.13	4 17 57.3	16 8.1	10 37.35	23 9 27.78
Sun.	10	23 23 46.02	3 54 26.8	16 7.8	10 21.68	23 13 24.33
Mon.	11	23 27 26.56	3 30 53.6	16 7.6	10 5.67	23 17 20.89
Tues.	12	23 31 6.78	3 7 18.1	16 7.3	9 49.34	23 21 17.44
Wed.	13	23 34 46.69	2 43 40.5	16 7.0	9 32.70	23 25 13.99
Thur.	14	23 38 26.33	2 20 1.3	16 6.8	9 15.79	23 29 10.54
Frid.	15	23 42 5.71	1 56 20.9	16 6.5	8 58.62	23 33 7.10
Sat.	16	23 45 44.85	1 32 39.5	16 6.2	8 41.21	23 37 3.65
Sun.	17	23 49 23.79	1 8 57.6	16 6.0	8 23.59	23 41 0.20
Mon.	18	23 53 2.54	0 45 15.5	16 5.7	8 5.79	23 44 56.75
Tues.	19	23 56 41.13	S. 0 21 33.5	16 5.4	7 47.83	23 48 53.30
Wed.	20	0 0 19.59	N. 0 2 8.1	16 5.1	7 29.74	23 52 49.86
Thur.	21	0 3 57.95	0 25 48.9	16 4.9	7 11.54	23 56 46.41
Frid.	22	0 7 36.22	0 49 28.6	16 4.6	6 53.26	0 0 42.96
Sat.	23	0 11 14.43	1 13 6.8	16 4.3	6 34.92	0 4 39.51
Sun.	24	0 14 52.61	1 36 43.3	16 4.0	6 16.54	0 8 36.07
Mon.	25	0 18 30.76	2 0 17.5	16 3.7	5 58.14	0 12 32.62
Tues.	26	0 22 8.90	2 23 49.3	16 3.5	5 39.73	0 16 29.17
Wed.	27	0 25 47.06	2 47 18.2	16 3.2	5 21.34	0 20 25.72
Thur.	28	0 29 25.25	3 10 43.8	16 2.9	5 2.98	0 24 22.28
Frid.	29	0 33 3.49	3 34 5.9	16 2.6	4 44.66	0 28 18.83
Sat.	30	0 36 41.79	3 57 23.9	16 2.3	4 26.40	0 32 15.38
Sun.	31	0 40 20.16	4 20 37.6	16 2.0	4 8.23	0 36 11.93
Mon.	32	0 43 58.64	N. 4 43 46.6	16 1.8	3 50.16	0 40 8.49

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm ⁺ of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	341 8 14.3	S. 0.40	9.9962849	1 21 51.20	15 48.9	15 44.2	57 56.5	57 39.1
2	342 8 23.9	0.48	.9963955	1 17 55.29	15 39.1	15 33.9	57 20.6	57 1.4
3	343 8 31.7	0.53	.9965064	1 13 59.38	15 28.5	15 23.2	56 41.8	56 22.2
4	344 8 37.5	0.55	9.9966176	1 10 3.47	15 17.9	15 12.8	56 2.9	55 44.3
5	345 8 41.3	0.55	.9967294	1 6 7.57	15 8.0	15 3.6	55 26.7	55 10.4
6	346 8 43.1	0.52	.9968417	1 2 11.66	14 59.6	14 56.1	54 55.8	54 43.1
7	347 8 42.8	0.47	9.9969546	0 58 15.75	14 53.2	14 51.0	54 32.5	54 24.2
8	348 8 40.3	0.40	.9970681	0 54 19.85	14 49.4	14 48.4	54 18.3	54 14.9
9	349 8 35.7	0.30	.9971822	0 50 23.94	14 48.2	14 48.8	54 14.2	54 16.1
10	350 8 28.9	0.20	9.9972971	0 46 28.03	14 49.9	14 51.9	54 20.6	54 27.8
11	351 8 19.8	S. 0.09	.9974129	0 42 32.13	14 54.6	14 57.8	54 37.4	54 49.3
12	352 8 8.5	N. 0.03	.9975295	0 38 36.22	15 1.7	15 6.1	55 3.5	55 19.6
13	353 7 55.0	0.15	9.9976471	0 34 40.32	15 11.0	15 16.2	55 37.5	55 56.8
14	354 7 39.3	0.26	.9977657	0 30 44.41	15 21.8	15 27.5	56 17.1	56 38.2
15	355 7 21.4	0.37	.9978853	0 26 48.50	15 33.4	15 39.2	56 59.6	57 21.0
16	356 7 1.3	0.46	9.9980060	0 22 52.60	15 44.9	15 50.3	57 41.8	58 1.7
17	357 6 39.0	0.52	.9981280	0 18 56.69	15 55.4	16 0.0	58 20.3	58 37.2
18	358 6 14.8	0.56	.9982512	0 15 0.78	16 4.1	16 7.6	58 52.2	59 5.1
19	359 5 48.6	0.56	9.9983753	0 11 4.88	16 10.5	16 12.7	59 15.7	59 23.8
20	0 5 20.6	0.54	.9985004	0 7 8.97	16 14.3	16 15.2	59 29.6	59 33.0
21	1 4 50.8	0.47	.9986265	{ 0 3 13.06 }	16 15.5	16 15.3	59 34.1	59 33.3
22	2 4 19.2	0.38	9.9987533	23 55 21.25	16 14.6	16 13.4	59 30.5	59 26.2
23	3 3 46.0	0.26	.9988806	23 51 25.34	16 11.8	16 9.8	59 20.3	59 13.2
24	4 3 11.1	N. 0.14	.9990083	23 47 29.44	16 7.6	16 5.1	59 5.0	58 55.9
25	5 2 34.4	0.00	9.9991362	23 43 33.53	16 2.3	15 59.5	58 46.0	58 35.3
26	6 1 55.9	S. 0.13	.9992641	23 39 37.62	15 56.4	15 53.1	58 24.0	58 12.0
27	7 1 15.6	0.26	.9993919	23 35 41.72	15 49.7	15 46.1	57 59.5	57 46.4
28	8 0 33.4	0.37	9.9995193	23 31 45.81	15 42.4	15 38.6	57 32.8	57 18.7
29	8 59 49.3	0.45	.9996463	23 27 49.90	15 34.6	15 30.5	57 4.1	56 49.2
30	9 59 3.3	0.51	.9997727	23 23 53.99	15 26.4	15 22.2	56 33.9	56 18.5
31	10 58 15.2	0.54	9.9998986	23 19 58.09	15 18.0	15 13.8	56 3.1	55 47.9
32	11 57 25.2	S. 0.55	0.0000239	23 16 2.18	15 9.7	15 5.8	55 33.0	55 18.7

MEAN TIME.

THE MOON'S

Day of the Month.	Longitude.		Latitude.		Age.	Meridian Passage.		
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.	
	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^d	^h ^m ^s	^h ^m ^s	^h ^m ^s
1	335 53 16.9	342 40 51.4	S. 3 39 56.7	S. 4 3 39.7	29.1	* * *	12 23.3	
2	349 24 34.3	356 4 6.5	4 23 43.3	4 39 56.4	0.6	0 47.7	13 11.4	
3	2 39 13.5	9 9 45.4	4 52 13.0	5 0 31.5	1.6	1 34.6	13 57.3	
4	15 35 38.2	21 56 53.3	5 4 53.9	5 5 25.2	2.6	2 19.7	14 41.8	
5	28 13 37.7	34 26 4.0	5 2 13.4	4 55 28.5	3.6	3 3.8	15 25.8	
6	40 34 30.4	46 39 19.4	4 45 22.0	4 32 6.3	4.6	3 47.8	16 9.9	
7	52 40 58.4	58 39 58.1	4 15 54.6	3 57 0.4	5.6	4 32.2	16 54.8	
8	64 36 52.3	70 32 17.9	3 35 37.6	3 12 0.2	6.6	5 17.6	17 40.9	
9	76 26 53.2	82 21 18.2	2 46 21.9	2 18 57.2	7.6	6 4.4	18 28.4	
10	88 16 13.5	94 12 19.9	1 50 0.5	1 19 47.2	8.6	6 52.7	19 17.2	
11	100 10 17.9	106 10 46.6	S. 0 48 32.7	S. 0 16 34.0	9.6	7 42.1	20 7.1	
12	112 14 23.8	118 21 44.4	N. 0 15 51.2	N. 0 48 23.2	10.6	8 32.3	20 57.5	
13	124 33 20.3	130 49 39.0	1 20 41.3	1 52 23.1	11.6	9 22.8	21 47.9	
14	137 11 3.2	143 37 49.4	2 23 4.3	2 52 19.3	12.6	10 13.0	22 38.0	
15	150 10 8.0	156 48 2.0	3 19 41.4	3 44 43.1	13.6	11 2.8	23 27.5	
16	163 31 26.3	170 20 8.4	4 6 57.1	4 25 56.5	14.6	11 52.2	* *	
17	177 13 47.9	184 11 57.1	4 41 16.7	4 52 35.7	15.6	12 41.6	0 16.9	
18	191 14 2.0	198 19 23.8	4 59 35.1	5 2 1.7	16.6	13 31.4	1 6.4	
19	205 27 20.3	212 37 7.9	4 59 47.4	4 52 50.2	17.6	14 22.5	1 56.8	
20	219 48 3.4	226 59 25.5	4 41 14.4	4 25 10.3	18.6	15 15.5	2 48.7	
21	234 10 36.8	241 21 4.1	4 4 54.1	3 40 46.8	19.6	16 10.7	3 42.8	
22	248 30 20.2	255 38 3.4	3 13 14.1	2 42 44.9	20.6	17 8.0	4 39.2	
23	262 43 57.7	269 47 51.9	2 9 50.8	1 35 5.2	21.6	18 7.0	5 37.4	
24	276 49 39.1	283 49 16.0	N. 0 59 2.6	N. 0 22 17.8	22.6	19 6.0	6 36.6	
25	290 46 41.0	297 41 54.3	S. 0 14 35.2	S. 0 51 2.4	23.6	20 3.8	7 35.1	
26	304 34 55.9	311 25 45.1	1 26 31.9	2 0 32.7	24.6	20 59.1	8 31.8	
27	318 14 20.3	325 0 37.6	2 32 36.7	3 2 17.9	25.6	21 51.4	9 25.6	
28	331 44 31.9	338 25 55.6	3 29 13.5	3 53 3.5	26.6	22 40.8	10 16.4	
29	345 4 39.8	351 40 34.6	4 13 31.5	4 30 24.7	27.6	23 27.8	11 4.5	
30	358 13 29.3	4 43 13.9	4 43 34.3	4 52 55.0	28.6	* *	11 50.5	
31	11 9 39.2	17 32 37.9	4 58 25.2	5 0 6.7	0.0	0 13.0	12 35.2	
32	23 52 5.5	30 8 0.5	S. 4 58 4.1	S. 4 52 25.2	1.0	0 57.3	13 19.3	

The Moon's Longitude and Latitude are from HANSEN's Tables *direct*; the Right Ascension and Declination contain NEWCOMB's corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 1.					SUNDAY 3.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	22 36 13.29	22.138	S. 12 45 50.7	107.11	0	0 17 28.46	20.211	S. 3 24 51.5	122.05
1	22 38 25.97	22.089	12 35 6.2	107.71	1	0 19 29.64	20.182	3 12 39.1	122.08
2	22 40 38.36	22.042	12 24 18.2	108.30	2	0 21 30.64	20.153	3 0 26.6	122.10
3	22 42 50.47	21.993	12 13 26.6	108.88	3	0 23 31.47	20.125	2 48 13.9	122.12
4	22 45 2.28	21.944	12 2 31.6	109.44	4	0 25 32.14	20.098	2 36 1.2	122.12
5	22 47 13.80	21.897	11 51 33.3	109.99	5	0 27 32.65	20.072	2 23 48.5	122.11
6	22 49 25.04	21.850	11 40 31.7	110.53	6	0 29 33.00	20.045	2 11 35.9	122.09
7	22 51 36.00	21.803	11 29 27.0	111.05	7	0 31 33.19	20.018	1 59 23.4	122.07
8	22 53 46.67	21.756	11 18 19.1	111.57	8	0 33 33.22	19.993	1 47 11.1	122.03
9	22 55 57.07	21.710	11 7 8.2	112.07	9	0 35 33.11	19.969	1 34 59.1	121.98
10	22 58 7.19	21.663	10 55 54.3	112.55	10	0 37 32.85	19.944	1 22 47.3	121.93
11	23 0 17.03	21.617	10 44 37.6	113.03	11	0 39 32.44	19.921	1 10 35.9	121.87
12	23 2 26.59	21.571	10 33 18.0	113.48	12	0 41 31.90	19.898	0 58 24.9	121.79
13	23 4 35.88	21.526	10 21 55.8	113.93	13	0 43 31.22	19.875	0 46 14.4	121.71
14	23 6 44.90	21.482	10 10 30.9	114.37	14	0 45 30.40	19.853	0 34 4.4	121.62
15	23 8 53.66	21.438	9 59 3.4	114.78	15	0 47 29.46	19.832	0 21 55.0	121.52
16	23 11 2.15	21.393	9 47 33.5	115.19	16	0 49 28.38	19.810	S. 0 9 46.2	121.42
17	23 13 10.37	21.349	9 36 1.1	115.59	17	0 51 27.18	19.790	N. 0 2 22.0	121.29
18	23 15 18.34	21.306	9 24 26.4	115.98	18	0 53 25.86	19.770	0 14 29.3	121.16
19	23 17 26.04	21.263	9 12 49.4	116.35	19	0 55 24.42	19.750	0 26 35.9	121.03
20	23 19 33.49	21.220	9 1 10.2	116.71	20	0 57 22.86	19.731	0 38 41.7	120.88
21	23 21 40.68	21.178	8 49 28.9	117.05	21	0 59 21.19	19.713	0 50 46.5	120.73
22	23 23 47.62	21.136	8 37 45.6	117.38	22	1 1 19.42	19.695	1 2 50.4	120.57
23	23 25 54.31	21.095	S. 8 26 0.3	117.71	23	1 3 17.53	19.677	N. 1 14 53.3	120.39
SATURDAY 2.					MONDAY 4.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	23 28 0.76	21.054	S. 8 14 13.1	118.02	0	1 5 15.54	19.660	N. 1 26 55.1	120.22
1	23 30 6.96	21.013	8 2 24.1	118.32	1	1 7 13.45	19.644	1 38 55.9	120.03
2	23 32 12.92	20.973	7 50 33.3	118.61	2	1 9 11.27	19.628	1 50 55.5	119.83
3	23 34 18.64	20.933	7 38 40.8	118.88	3	1 11 8.99	19.613	2 2 53.9	119.63
4	23 36 24.12	20.894	7 26 46.7	119.14	4	1 13 6.62	19.598	2 14 51.1	119.42
5	23 38 29.37	20.855	7 14 51.1	119.39	5	1 15 4.17	19.584	2 26 46.9	119.20
6	23 40 34.38	20.817	7 2 54.0	119.63	6	1 17 1.63	19.570	2 38 41.5	118.98
7	23 42 39.17	20.780	6 50 55.5	119.86	7	1 18 59.01	19.557	2 50 34.6	118.73
8	23 44 43.74	20.743	6 38 55.7	120.08	8	1 20 56.31	19.544	3 2 26.3	118.49
9	23 46 48.08	20.706	6 26 54.6	120.28	9	1 22 53.54	19.533	3 14 16.5	118.23
10	23 48 52.21	20.669	6 14 52.3	120.48	10	1 24 50.70	19.520	3 26 5.1	117.98
11	23 50 56.11	20.633	6 2 48.9	120.66	11	1 26 47.78	19.508	3 37 52.2	117.71
12	23 52 59.80	20.598	5 50 44.4	120.83	12	1 28 44.80	19.498	3 49 37.6	117.43
13	23 55 3.28	20.563	5 38 38.9	120.99	13	1 30 41.76	19.488	4 1 21.4	117.16
14	23 57 6.55	20.528	5 26 32.5	121.14	14	1 32 38.66	19.479	4 13 3.5	116.87
15	23 59 9.61	20.494	5 14 25.2	121.28	15	1 34 35.51	19.470	4 24 43.8	116.57
16	0 1 12.48	20.461	5 2 17.1	121.41	16	1 36 32.30	19.461	4 36 22.3	116.26
17	0 3 15.14	20.428	4 50 8.3	121.52	17	1 38 29.04	19.453	4 47 58.9	115.95
18	0 5 17.61	20.395	4 37 58.9	121.63	18	1 40 25.73	19.445	4 59 33.7	115.63
19	0 7 19.88	20.363	4 25 48.8	121.73	19	1 42 22.38	19.438	5 11 6.5	115.30
20	0 9 21.97	20.333	4 13 38.1	121.82	20	1 44 18.98	19.431	5 22 37.3	114.97
21	0 11 23.87	20.301	4 1 27.0	121.88	21	1 46 15.55	19.425	5 34 6.1	114.63
22	0 13 25.58	20.270	3 49 15.5	121.94	22	1 48 12.08	19.419	5 45 32.8	114.28
23	0 15 27.11	20.240	3 37 3.7	122.00	23	1 50 8.58	19.414	5 56 57.4	113.93
24	0 17 28.46	20.211	S. 3 24 51.5	122.05	24	1 52 5.05	19.409	N. 6 8 19.9	113.57

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	in
TUESDAY 5.					THURSDAY 7.				
0	1 52 5' 05	19' 409	N. 6 8 19' 9	113' 57	0	3 25 33' 82	19' 698	N. 14 19 24' 8	8
1	1 54 1' 49	19' 405	6 19 40' 2	113' 19	1	3 27 32' 05	19' 713	14 28 15' 3	8
2	1 55 57' 91	19' 402	6 30 58' 2	112' 82	2	3 29 30' 38	19' 729	14 37 1' 8	8
3	1 57 54' 31	19' 398	6 42 14' 0	112' 43	3	3 31 28' 80	19' 744	14 45 44' 4	8
4	1 59 50' 69	19' 395	6 53 27' 4	112' 04	4	3 33 27' 31	19' 761	14 54 22' 9	8
5	2 1 47' 05	19' 393	7 4 38' 5	111' 64	5	3 35 25' 93	19' 777	15 2 57' 3	8
6	2 3 43' 40	19' 392	7 15 47' 1	111' 24	6	3 37 24' 64	19' 793	15 11 27' 7	8
7	2 5 39' 75	19' 390	7 26 53' 4	110' 83	7	3 39 23' 45	19' 811	15 19 53' 9	8
8	2 7 36' 08	19' 388	7 37 57' 1	110' 41	8	3 41 22' 37	19' 828	15 28 15' 9	8
9	2 9 32' 41	19' 388	7 48 58' 3	109' 99	9	3 43 21' 39	19' 845	15 36 33' 8	8
10	2 11 28' 74	19' 388	7 59 57' 0	109' 57	10	3 45 20' 51	19' 863	15 44 47' 4	8
11	2 13 25' 07	19' 388	8 10 53' 1	109' 13	11	3 47 19' 74	19' 881	15 52 56' 8	8
12	2 15 21' 40	19' 389	8 21 46' 5	108' 68	12	3 49 19' 08	19' 899	16 1 1' 9	8
13	2 17 17' 74	19' 392	8 32 37' 3	108' 23	13	3 51 18' 53	19' 918	16 9 2' 7	7
14	2 19 14' 10	19' 393	8 43 25' 3	107' 78	14	3 53 18' 09	19' 936	16 16 59' 1	7
15	2 21 10' 46	19' 395	8 54 10' 6	107' 32	15	3 55 17' 76	19' 955	16 24 51' 1	7
16	2 23 6' 84	19' 398	9 4 53' 1	106' 85	16	3 57 17' 55	19' 974	16 32 38' 7	7
17	2 25 3' 24	19' 402	9 15 32' 8	106' 38	17	3 59 17' 45	19' 994	16 40 21' 8	7
18	2 26 59' 66	19' 405	9 26 9' 6	105' 89	18	4 1 17' 48	20' 014	16 48 0' 5	7
19	2 28 56' 10	19' 408	9 36 43' 5	105' 41	19	4 3 17' 62	20' 033	16 55 34' 7	7
20	2 30 52' 56	19' 413	9 47 14' 5	104' 92	20	4 5 17' 88	20' 053	17 3 4' 3	7
21	2 32 49' 06	19' 418	9 57 42' 5	104' 42	21	4 7 18' 26	20' 073	17 10 29' 4	7
22	2 34 45' 58	19' 423	10 8 7' 5	103' 91	22	4 9 18' 76	20' 093	17 17 49' 9	7
23	2 36 42' 14	19' 429	N. 10 18 29' 4	103' 39	23	4 11 19' 38	20' 114	N. 17 25 5' 8	7
WEDNESDAY 6.					FRIDAY 8.				
0	2 38 38' 73	19' 435	N. 10 28 48' 2	102' 88	0	4 13 20' 13	20' 136	N. 17 32 17' 0	7
1	2 40 35' 36	19' 442	10 39 3' 9	102' 36	1	4 15 21' 01	20' 157	17 39 23' 5	7
2	2 42 32' 03	19' 449	10 49 16' 5	101' 83	2	4 17 22' 01	20' 178	17 46 25' 3	6
3	2 44 28' 75	19' 457	10 59 25' 9	101' 29	3	4 19 23' 14	20' 199	17 53 22' 4	6
4	2 46 25' 51	19' 465	11 9 32' 0	100' 75	4	4 21 24' 40	20' 220	18 0 14' 7	6
5	2 48 22' 33	19' 473	11 19 34' 9	100' 21	5	4 23 25' 78	20' 242	18 7 2' 2	6
6	2 50 19' 19	19' 481	11 29 34' 5	99' 66	6	4 25 27' 30	20' 263	18 13 44' 8	6
7	2 52 16' 10	19' 490	11 39 30' 8	99' 10	7	4 27 28' 94	20' 285	18 20 22' 6	6
8	2 54 13' 07	19' 500	11 49 23' 7	98' 54	8	4 29 30' 72	20' 308	18 26 55' 5	6
9	2 56 10' 10	19' 509	11 59 13' 3	97' 97	9	4 31 32' 63	20' 329	18 33 23' 4	6
10	2 58 7' 18	19' 519	12 8 59' 4	97' 39	10	4 33 34' 67	20' 352	18 39 46' 4	6
11	3 0 4' 33	19' 530	12 18 42' 0	96' 81	11	4 35 36' 85	20' 373	18 46 4' 4	6
12	3 2 1' 54	19' 541	12 28 21' 1	96' 23	12	4 37 39' 15	20' 395	18 52 17' 4	6
13	3 3 58' 82	19' 552	12 37 56' 7	95' 63	13	4 39 41' 59	20' 418	18 58 25' 4	6
14	3 5 56' 16	19' 563	12 47 28' 7	95' 03	14	4 41 44' 17	20' 441	19 4 28' 2	6
15	3 7 53' 57	19' 575	12 56 57' 1	94' 43	15	4 43 46' 88	20' 463	19 10 26' 0	5
16	3 9 51' 06	19' 588	13 6 21' 8	93' 82	16	4 45 49' 73	20' 486	19 16 18' 6	5
17	3 11 48' 63	19' 601	13 15 42' 9	93' 21	17	4 47 52' 71	20' 508	19 22 6' 1	5
18	3 13 46' 27	19' 613	13 25 0' 3	92' 58	18	4 49 55' 83	20' 532	19 27 48' 4	5
19	3 15 43' 98	19' 626	13 34 13' 9	91' 95	19	4 51 59' 09	20' 554	19 33 25' 4	5
20	3 17 41' 78	19' 640	13 43 23' 7	91' 33	20	4 54 2' 48	20' 577	19 38 57' 2	5
21	3 19 39' 66	19' 654	13 52 29' 8	90' 69	21	4 56 6' 01	20' 600	19 44 23' 8	5
22	3 21 37' 63	19' 668	14 1 32' 0	90' 04	22	4 58 9' 68	20' 623	19 49 45' 0	5
23	3 23 35' 68	19' 683	14 10 30' 3	89' 40	23	5 0 13' 48	20' 645	19 55 0' 9	5
24	3 25 33' 82	19' 698	N. 14 19 24' 8	88' 75	24	5 2 17' 42	20' 668	N. 20 0 11' 5	5

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 9.					MONDAY 11.				
0	5 2 17.42	20.668	N.20 0 11.5	51.32	0	6 43 58.69	21.636	N.22 15 22.1	3.59
1	5 4 21.50	20.692	20 5 16.7	50.42	1	6 46 8.55	21.651	22 15 40.4	2.52
2	5 6 25.72	20.714	20 10 16.5	49.51	2	6 48 18.50	21.666	22 15 52.3	1.44
3	5 8 30.07	20.737	20 15 10.8	48.59	3	6 50 28.54	21.680	22 15 57.7	0.36
4	5 10 34.56	20.760	20 19 59.6	47.68	4	6 52 38.66	21.694	22 15 56.6	0.73
5	5 12 39.19	20.783	20 24 43.0	46.77	5	6 54 48.87	21.708	22 15 49.0	1.81
6	5 14 43.96	20.806	20 29 20.9	45.85	6	6 56 59.15	21.720	22 15 34.9	2.89
7	5 16 48.86	20.828	20 33 53.2	44.92	7	6 59 9.51	21.733	22 15 14.3	3.98
8	5 18 53.90	20.851	20 38 19.9	43.98	8	7 1 19.95	21.746	22 14 47.2	5.07
9	5 20 59.07	20.873	20 42 41.0	43.05	9	7 3 30.46	21.758	22 14 13.5	6.16
10	5 23 4.38	20.897	20 46 56.5	42.12	10	7 5 51.05	21.770	22 13 33.3	7.24
11	5 25 9.83	20.919	20 51 6.4	41.17	11	7 7 51.70	21.782	22 12 46.6	8.34
12	5 27 15.41	20.942	20 55 10.5	40.22	12	7 10 2.43	21.793	22 11 53.2	9.44
13	5 29 21.13	20.964	20 59 9.0	39.27	13	7 12 13.22	21.804	22 10 53.3	10.53
14	5 31 26.98	20.986	21 3 1.7	38.31	14	7 14 24.08	21.814	22 9 46.8	11.63
15	5 33 32.96	21.008	21 6 48.7	37.36	15	7 16 34.99	21.824	22 8 33.7	12.73
16	5 35 39.07	21.030	21 10 30.0	36.39	16	7 18 45.97	21.835	22 7 14.1	13.83
17	5 37 45.32	21.052	21 14 5.4	35.42	17	7 20 57.01	21.844	22 5 47.8	14.93
18	5 39 51.70	21.073	21 17 35.0	34.44	18	7 23 8.10	21.853	22 4 14.9	16.03
19	5 41 58.20	21.095	21 20 58.7	33.47	19	7 25 19.24	21.861	22 2 35.4	17.13
20	5 44 4.84	21.118	21 24 16.6	32.48	20	7 27 30.43	21.870	22 0 49.3	18.24
21	5 46 11.61	21.138	21 27 28.5	31.49	21	7 29 41.68	21.878	21 58 56.5	19.35
22	5 48 18.50	21.159	21 30 34.5	30.51	22	7 31 52.97	21.886	21 56 57.1	20.45
23	5 50 25.52	21.180	N.21 33 34.6	29.52	23	7 34 4.31	21.893	N.21 54 51.1	21.56
SUNDAY 10.					TUESDAY 12.				
0	5 52 32.66	21.201	N.21 36 28.7	28.52	0	7 36 15.69	21.900	N.21 52 38.4	22.67
1	5 54 39.93	21.222	21 39 16.8	27.52	1	7 38 27.11	21.907	21 50 19.1	23.78
2	5 56 47.32	21.243	21 41 58.9	26.52	2	7 40 38.57	21.913	21 47 53.1	24.88
3	5 58 54.84	21.263	21 44 35.0	25.51	3	7 42 50.07	21.920	21 45 20.5	25.98
4	6 1 2.47	21.283	21 47 5.0	24.49	4	7 45 1.61	21.925	21 42 41.3	27.09
5	6 3 10.23	21.303	21 49 28.9	23.48	5	7 47 13.17	21.930	21 39 55.4	28.20
6	6 5 18.11	21.323	21 51 46.7	22.46	6	7 49 24.77	21.935	21 37 2.9	29.31
7	6 7 26.10	21.342	21 53 58.4	21.43	7	7 51 36.39	21.939	21 34 3.7	30.42
8	6 9 34.21	21.362	21 56 3.9	20.41	8	7 53 48.04	21.944	21 30 57.9	31.53
9	6 11 42.44	21.382	21 58 3.3	19.38	9	7 55 59.72	21.948	21 27 45.4	32.63
10	6 13 50.79	21.400	21 59 56.5	18.35	10	7 58 11.42	21.951	21 24 26.3	33.73
11	6 15 59.24	21.418	22 1 43.5	17.32	11	8 0 23.13	21.954	21 21 0.6	34.84
12	6 18 7.80	21.437	22 3 24.3	16.28	12	8 2 34.87	21.958	21 17 28.2	35.95
13	6 20 16.48	21.455	22 4 58.9	15.24	13	8 4 46.62	21.960	21 13 49.2	37.05
14	6 22 25.26	21.473	22 6 27.2	14.19	14	8 6 58.39	21.962	21 10 3.6	38.15
15	6 24 34.15	21.490	22 7 49.2	13.14	15	8 9 10.17	21.963	21 6 11.4	39.25
16	6 26 43.14	21.508	22 9 4.9	12.09	16	8 11 21.95	21.965	21 2 12.6	40.35
17	6 28 52.24	21.525	22 10 14.3	11.04	17	8 13 33.75	21.967	20 58 7.2	41.45
18	6 31 1.44	21.542	22 11 17.4	9.99	18	8 15 45.55	21.968	20 53 55.2	42.55
19	6 33 10.74	21.559	22 12 14.2	8.93	19	8 17 57.36	21.968	20 49 36.6	43.65
20	6 35 20.15	21.576	22 13 4.5	7.86	20	8 20 9.16	21.968	20 45 11.4	44.74
21	6 37 29.65	21.591	22 13 48.5	6.80	21	8 22 20.97	21.968	20 40 39.7	45.83
22	6 39 39.24	21.606	22 14 26.1	5.73	22	8 24 32.78	21.968	20 36 1.4	46.93
23	6 41 48.92	21.621	22 14 57.3	4.67	23	8 26 44.59	21.968	20 31 16.6	48.01
24	6 43 58.69	21.636	N.22 15 22.1	3.59	24	8 28 56.39	21.966	N.20 26 25.3	49.09

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 13.					FRIDAY 15.				
0	8 ^h 28 ^m 56 ^s 39	21 ^{''} 966	N. 20 26 25 ^{''} 3	49 ^{''} 09	0	10 ^h 13 ^m 50 ^s 18	21 ^{''} 687	N. 14 31 57 ^{''} 2	96 ^{''} 77
1	8 31 8 18	21 ^{''} 965	20 21 27 ^{''} 5	50 ^{''} 18	1	10 16 0 28	21 ^{''} 679	14 22 14 ^{''} 0	97 ^{''} 63
2	8 33 19 97	21 ^{''} 963	20 16 23 ^{''} 1	51 ^{''} 27	2	10 18 10 33	21 ^{''} 671	14 12 25 ^{''} 7	98 ^{''} 48
3	8 35 31 74	21 ^{''} 961	20 11 12 ^{''} 3	52 ^{''} 34	3	10 20 20 33	21 ^{''} 663	14 2 32 ^{''} 3	99 ^{''} 34
4	8 37 43 50	21 ^{''} 959	20 5 55 ^{''} 0	53 ^{''} 43	4	10 22 30 29	21 ^{''} 657	13 52 33 ^{''} 9	100 ^{''} 15
5	8 39 55 25	21 ^{''} 958	20 0 31 ^{''} 2	54 ^{''} 50	5	10 24 40 21	21 ^{''} 649	13 42 30 ^{''} 5	100 ^{''} 97
6	8 42 6 99	21 ^{''} 955	19 55 1 ^{''} 0	55 ^{''} 58	6	10 26 50 08	21 ^{''} 641	13 32 22 ^{''} 3	101 ^{''} 78
7	8 44 18 71	21 ^{''} 951	19 49 24 ^{''} 3	56 ^{''} 64	7	10 28 59 90	21 ^{''} 633	13 22 9 ^{''} 1	102 ^{''} 60
8	8 46 30 40	21 ^{''} 948	19 43 41 ^{''} 3	57 ^{''} 71	8	10 31 9 68	21 ^{''} 627	13 11 51 ^{''} 1	103 ^{''} 40
9	8 48 42 08	21 ^{''} 945	19 37 51 ^{''} 8	58 ^{''} 78	9	10 33 19 42	21 ^{''} 620	13 1 28 ^{''} 3	104 ^{''} 19
10	8 50 53 74	21 ^{''} 942	19 31 56 ^{''} 0	59 ^{''} 83	10	10 35 29 12	21 ^{''} 613	12 51 0 ^{''} 8	104 ^{''} 98
11	8 53 5 38	21 ^{''} 938	19 25 53 ^{''} 8	60 ^{''} 89	11	10 37 38 78	21 ^{''} 606	12 40 28 ^{''} 6	105 ^{''} 76
12	8 55 16 99	21 ^{''} 933	19 19 45 ^{''} 3	61 ^{''} 95	12	10 39 48 39	21 ^{''} 599	12 29 51 ^{''} 7	106 ^{''} 53
13	8 57 28 57	21 ^{''} 928	19 13 30 ^{''} 4	63 ^{''} 00	13	10 41 57 97	21 ^{''} 593	12 19 10 ^{''} 3	107 ^{''} 28
14	8 59 40 13	21 ^{''} 924	19 7 9 ^{''} 3	64 ^{''} 04	14	10 44 7 51	21 ^{''} 587	12 8 24 ^{''} 4	108 ^{''} 03
15	9 1 51 66	21 ^{''} 919	19 0 41 ^{''} 9	65 ^{''} 09	15	10 46 17 01	21 ^{''} 580	11 57 34 ^{''} 0	108 ^{''} 77
16	9 4 3 16	21 ^{''} 914	18 54 8 ^{''} 2	66 ^{''} 13	16	10 48 26 47	21 ^{''} 574	11 46 39 ^{''} 2	109 ^{''} 50
17	9 6 14 63	21 ^{''} 909	18 47 28 ^{''} 3	67 ^{''} 17	17	10 50 35 90	21 ^{''} 568	11 35 40 ^{''} 0	110 ^{''} 23
18	9 8 26 07	21 ^{''} 903	18 40 42 ^{''} 2	68 ^{''} 20	18	10 52 45 29	21 ^{''} 563	11 24 36 ^{''} 5	110 ^{''} 94
19	9 10 37 47	21 ^{''} 898	18 33 49 ^{''} 9	69 ^{''} 23	19	10 54 54 65	21 ^{''} 558	11 13 28 ^{''} 7	111 ^{''} 65
20	9 12 48 84	21 ^{''} 893	18 26 51 ^{''} 5	70 ^{''} 24	20	10 57 3 98	21 ^{''} 552	11 2 16 ^{''} 7	112 ^{''} 34
21	9 15 0 18	21 ^{''} 887	18 19 47 ^{''} 0	71 ^{''} 27	21	10 59 13 27	21 ^{''} 547	10 51 0 ^{''} 6	113 ^{''} 03
22	9 17 11 48	21 ^{''} 880	18 12 36 ^{''} 3	72 ^{''} 29	22	11 1 22 54	21 ^{''} 542	10 39 40 ^{''} 4	113 ^{''} 71
23	9 19 22 74	21 ^{''} 873	N. 18 5 19 ^{''} 5	73 ^{''} 30	23	11 3 31 77	21 ^{''} 537	N. 10 28 16 ^{''} 1	114 ^{''} 38
THURSDAY 14.					SATURDAY 16.				
0	9 21 33 96	21 ^{''} 867	N. 17 57 56 ^{''} 7	74 ^{''} 30	0	11 5 40 98	21 ^{''} 533	N. 10 16 47 ^{''} 9	115 ^{''} 03
1	9 23 45 14	21 ^{''} 861	17 50 27 ^{''} 9	75 ^{''} 30	1	11 7 50 16	21 ^{''} 528	10 5 15 ^{''} 7	115 ^{''} 68
2	9 25 56 29	21 ^{''} 854	17 42 53 ^{''} 1	76 ^{''} 30	2	11 9 59 32	21 ^{''} 525	9 53 39 ^{''} 7	116 ^{''} 32
3	9 28 7 39	21 ^{''} 847	17 35 12 ^{''} 3	77 ^{''} 29	3	11 12 8 46	21 ^{''} 521	9 41 59 ^{''} 9	116 ^{''} 95
4	9 30 18 45	21 ^{''} 840	17 27 25 ^{''} 6	78 ^{''} 28	4	11 14 17 57	21 ^{''} 517	9 30 16 ^{''} 3	117 ^{''} 58
5	9 32 29 47	21 ^{''} 833	17 19 32 ^{''} 9	79 ^{''} 27	5	11 16 26 66	21 ^{''} 514	9 18 29 ^{''} 0	118 ^{''} 18
6	9 34 40 44	21 ^{''} 825	17 11 34 ^{''} 4	80 ^{''} 23	6	11 18 35 74	21 ^{''} 511	9 6 38 ^{''} 1	118 ^{''} 78
7	9 36 51 37	21 ^{''} 818	17 3 30 ^{''} 1	81 ^{''} 20	7	11 20 44 79	21 ^{''} 508	8 54 43 ^{''} 7	119 ^{''} 37
8	9 39 2 26	21 ^{''} 811	16 55 20 ^{''} 0	82 ^{''} 17	8	11 22 53 83	21 ^{''} 506	8 42 45 ^{''} 7	119 ^{''} 95
9	9 41 13 10	21 ^{''} 803	16 47 4 ^{''} 1	83 ^{''} 13	9	11 25 2 86	21 ^{''} 504	8 30 44 ^{''} 3	120 ^{''} 51
10	9 43 23 90	21 ^{''} 796	16 38 42 ^{''} 4	84 ^{''} 09	10	11 27 11 88	21 ^{''} 502	8 18 39 ^{''} 6	121 ^{''} 07
11	9 45 34 65	21 ^{''} 788	16 30 15 ^{''} 0	85 ^{''} 03	11	11 29 20 88	21 ^{''} 499	8 6 31 ^{''} 5	121 ^{''} 62
12	9 47 45 36	21 ^{''} 781	16 21 42 ^{''} 0	85 ^{''} 98	12	11 31 29 87	21 ^{''} 498	7 54 20 ^{''} 2	122 ^{''} 15
13	9 49 56 02	21 ^{''} 773	16 13 3 ^{''} 3	86 ^{''} 91	13	11 33 38 86	21 ^{''} 498	7 42 5 ^{''} 7	122 ^{''} 68
14	9 52 6 63	21 ^{''} 765	16 4 19 ^{''} 1	87 ^{''} 83	14	11 35 47 84	21 ^{''} 497	7 29 48 ^{''} 1	123 ^{''} 19
15	9 54 17 20	21 ^{''} 758	15 55 29 ^{''} 3	88 ^{''} 77	15	11 37 56 82	21 ^{''} 497	7 17 27 ^{''} 4	123 ^{''} 70
16	9 56 27 72	21 ^{''} 749	15 46 33 ^{''} 9	89 ^{''} 68	16	11 40 5 80	21 ^{''} 498	7 5 3 ^{''} 7	124 ^{''} 19
17	9 58 38 19	21 ^{''} 742	15 37 33 ^{''} 1	90 ^{''} 58	17	11 42 14 79	21 ^{''} 498	6 52 37 ^{''} 1	124 ^{''} 68
18	10 0 48 62	21 ^{''} 734	15 28 26 ^{''} 9	91 ^{''} 49	18	11 44 23 77	21 ^{''} 498	6 40 7 ^{''} 6	125 ^{''} 14
19	10 2 59 00	21 ^{''} 726	15 19 15 ^{''} 2	92 ^{''} 40	19	11 46 32 76	21 ^{''} 499	6 27 35 ^{''} 4	125 ^{''} 60
20	10 5 9 33	21 ^{''} 718	15 9 58 ^{''} 1	93 ^{''} 28	20	11 48 41 76	21 ^{''} 501	6 15 0 ^{''} 4	126 ^{''} 06
21	10 7 19 61	21 ^{''} 710	15 0 35 ^{''} 8	94 ^{''} 17	21	11 50 50 77	21 ^{''} 503	6 2 22 ^{''} 7	126 ^{''} 49
22	10 9 29 85	21 ^{''} 703	14 51 8 ^{''} 1	95 ^{''} 05	22	11 52 59 79	21 ^{''} 505	5 49 42 ^{''} 5	126 ^{''} 91
23	10 11 40 04	21 ^{''} 694	14 41 35 ^{''} 2	95 ^{''} 91	23	11 55 8 83	21 ^{''} 508	5 36 59 ^{''} 8	127 ^{''} 33
24	10 13 50 18	21 ^{''} 687	N. 14 31 57 ^{''} 2	96 ^{''} 77	24	11 57 17 88	21 ^{''} 510	N. 5 24 14 ^{''} 6	127 ^{''} 73

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 17.					TUESDAY 19.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	11 57 17.88	21.510	N. 5 24 14.6	127.73	0	13 41 39.37	22.141	S. 5 11 29.2	132.08
1	11 59 26.95	21.513	5 11 27.0	128.13	1	13 43 52.29	22.165	5 24 41.0	131.84
2	12 1 36.04	21.517	4 58 37.1	128.50	2	13 46 5.35	22.190	5 37 51.3	131.58
3	12 3 45.15	21.521	4 45 45.0	128.87	3	13 48 18.57	22.215	5 50 59.9	131.30
4	12 5 54.29	21.525	4 32 50.7	129.22	4	13 50 31.93	22.239	6 4 6.9	131.02
5	12 8 3.45	21.529	4 19 54.4	129.56	5	13 52 45.44	22.265	6 17 12.2	130.73
6	12 10 12.64	21.535	4 6 56.0	129.90	6	13 54 59.11	22.292	6 30 15.6	130.41
7	12 12 21.87	21.541	3 53 55.6	130.22	7	13 57 12.94	22.318	6 43 17.1	130.08
8	12 14 31.13	21.547	3 40 53.4	130.53	8	13 59 26.93	22.345	6 56 16.6	129.74
9	12 16 40.43	21.553	3 27 49.3	130.82	9	14 1 41.08	22.372	7 9 14.0	129.38
10	12 18 49.76	21.559	3 14 43.6	131.09	10	14 3 55.39	22.400	7 22 9.2	129.02
11	12 20 59.14	21.567	3 1 36.2	131.37	11	14 6 9.88	22.428	7 35 2.2	128.63
12	12 23 8.56	21.574	2 48 27.2	131.63	12	14 8 24.53	22.456	7 47 52.8	128.23
13	12 25 18.03	21.583	2 35 16.7	131.87	13	14 10 39.35	22.485	8 04 0.9	127.81
14	12 27 27.55	21.591	2 22 4.8	132.10	14	14 12 54.35	22.514	8 13 26.5	127.38
15	12 29 37.12	21.599	2 8 51.5	132.32	15	14 15 9.52	22.543	8 26 9.5	126.94
16	12 31 46.74	21.608	1 55 37.0	132.53	16	14 17 24.87	22.573	8 38 49.8	126.48
17	12 33 56.42	21.618	1 42 21.2	132.73	17	14 19 40.40	22.603	8 51 27.3	126.01
18	12 36 6.16	21.629	1 29 4.3	132.90	18	14 21 56.11	22.634	9 4 1.9	125.53
19	12 38 15.97	21.639	1 15 46.4	133.07	19	14 24 12.01	22.666	9 16 33.6	125.03
20	12 40 25.83	21.650	1 2 27.5	133.23	20	14 26 28.10	22.697	9 29 2.2	124.51
21	12 42 35.77	21.662	0 49 7.7	133.37	21	14 28 44.37	22.728	9 41 27.7	123.98
22	12 44 45.78	21.673	0 35 47.1	133.49	22	14 31 0.84	22.760	9 53 49.9	123.43
23	12 46 55.85	21.686	N. 0 22 25.8	133.61	23	14 33 17.49	22.793	S. 10 6 8.9	122.88
MONDAY 18.					WEDNESDAY 20.				
0	12 49 6.01	21.699	N. 0 9 3.8	133.72	0	14 35 34.35	22.826	S. 10 18 24.4	122.30
1	12 51 16.24	21.713	S. 0 4 18.8	133.80	1	14 37 51.40	22.858	10 30 36.5	121.72
2	12 53 26.56	21.726	0 17 41.8	133.88	2	14 40 8.64	22.890	10 42 45.0	121.12
3	12 55 36.95	21.739	0 31 5.3	133.94	3	14 42 26.08	22.923	10 54 49.9	120.50
4	12 57 47.43	21.755	0 44 29.1	133.99	4	14 44 43.72	22.958	11 6 51.0	119.88
5	12 59 58.01	21.770	0 57 53.2	134.03	5	14 47 1.57	22.992	11 18 48.4	119.23
6	13 2 8.67	21.785	1 11 17.5	134.05	6	14 49 19.62	23.026	11 30 41.8	118.57
7	13 4 19.43	21.801	1 24 41.8	134.05	7	14 51 37.88	23.060	11 42 31.2	117.89
8	13 6 30.28	21.818	1 38 6.1	134.05	8	14 53 56.34	23.094	11 54 16.5	117.21
9	13 8 41.24	21.835	1 51 30.4	134.03	9	14 56 15.01	23.129	12 5 57.7	116.52
10	13 10 52.30	21.852	2 4 54.5	134.00	10	14 58 33.89	23.164	12 17 34.7	115.80
11	13 13 3.46	21.869	2 18 18.4	133.96	11	15 0 52.08	23.200	12 29 7.3	115.07
12	13 15 14.73	21.888	2 31 42.0	133.89	12	15 3 12.29	23.236	12 40 35.5	114.33
13	13 17 26.11	21.906	2 45 5.1	133.82	13	15 5 31.81	23.271	12 51 59.2	113.57
14	13 19 37.60	21.925	2 58 27.8	133.73	14	15 7 51.54	23.306	13 3 18.3	112.79
15	13 21 49.21	21.945	3 11 49.9	133.63	15	15 10 11.48	23.342	13 14 32.7	112.01
16	13 24 0.94	21.965	3 25 11.3	133.51	16	15 12 31.64	23.378	13 25 42.4	111.22
17	13 26 12.79	21.986	3 38 32.0	133.38	17	15 14 52.02	23.414	13 36 47.3	110.40
18	13 28 24.77	22.007	3 51 51.9	133.24	18	15 17 12.61	23.450	13 47 47.2	109.58
19	13 30 36.87	22.028	4 5 10.9	133.08	19	15 19 33.42	23.487	13 58 42.2	108.73
20	13 32 49.10	22.049	4 18 28.9	132.91	20	15 21 54.45	23.523	14 9 32.0	107.88
21	13 35 1.46	22.072	4 31 45.8	132.72	21	15 24 15.70	23.560	14 20 16.7	107.02
22	13 37 13.96	22.095	4 45 1.5	132.52	22	15 26 37.17	23.596	14 30 56.2	106.13
23	13 39 26.60	22.118	4 58 16.0	132.31	23	15 28 58.85	23.632	14 41 30.3	105.23
24	13 41 39.37	22.141	S. 5 11 29.2	132.08	24	15 31 20.75	23.668	S. 14 51 59.0	104.33

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 21.					SATURDAY 23.				
0	15 31 20.75	23.668	S. 14 51 59.0	104.33	0	17 28 49.90	25.138	S. 21 53 30.9	47.33
1	15 33 42.87	23.706	15 2 22.3	103.42	1	17 31 20.78	25.156	21 10 10.7	45.93
2	15 36 5.22	23.743	15 12 40.0	102.48	2	17 33 51.77	25.173	21 14 42.1	44.52
3	15 38 27.78	23.778	15 22 52.1	101.53	3	17 36 22.86	25.190	21 19 4.9	43.09
4	15 40 50.56	23.814	15 32 58.4	100.58	4	17 38 54.05	25.206	21 23 19.2	41.67
5	15 43 13.55	23.851	15 42 59.0	99.61	5	17 41 25.33	25.220	21 27 25.0	40.25
6	15 45 36.77	23.888	15 52 53.7	98.62	6	17 43 56.69	25.233	21 31 22.2	38.82
7	15 48 0.20	23.924	16 2 42.4	97.62	7	17 46 28.13	25.247	21 35 10.8	37.38
8	15 50 23.86	23.961	16 12 25.1	96.61	8	17 48 59.66	25.260	21 38 50.7	35.93
9	15 52 47.73	23.996	16 22 1.7	95.59	9	17 51 31.25	25.271	21 42 22.0	34.48
10	15 55 11.81	24.032	16 31 32.2	94.56	10	17 54 2.91	25.282	21 45 44.5	33.03
11	15 57 36.11	24.068	16 40 56.4	93.50	11	17 56 34.63	25.292	21 48 58.4	31.58
12	16 0 0.62	24.103	16 50 14.2	92.44	12	17 59 6.41	25.301	21 52 3.5	30.13
13	16 2 25.35	24.139	16 59 25.7	91.37	13	18 1 38.24	25.308	21 54 59.9	28.67
14	16 4 50.29	24.174	17 8 30.7	90.28	14	18 4 10.11	25.316	21 57 47.5	27.20
15	16 7 15.44	24.209	17 17 29.1	89.19	15	18 6 42.03	25.323	22 0 26.3	25.73
16	16 9 40.80	24.244	17 26 21.0	88.08	16	18 9 13.98	25.328	22 2 56.3	24.27
17	16 12 6.37	24.278	17 35 6.1	86.96	17	18 11 45.96	25.332	22 5 17.5	22.80
18	16 14 32.14	24.313	17 43 44.5	85.83	18	18 14 17.96	25.335	22 7 29.9	21.33
19	16 16 58.12	24.348	17 52 16.1	84.69	19	18 16 49.98	25.338	22 9 33.4	19.85
20	16 19 24.31	24.381	18 0 40.8	83.54	20	18 19 22.01	25.338	22 11 28.1	18.38
21	16 21 50.69	24.414	18 8 58.6	82.38	21	18 21 54.04	25.339	22 13 13.9	16.90
22	16 24 17.28	24.447	18 17 9.3	81.20	22	18 24 26.08	25.340	22 14 50.9	15.42
23	16 26 44.06	24.479	S. 18 25 13.0	80.02	23	18 26 58.12	25.338	S. 22 16 18.9	13.93
FRIDAY 22.					SUNDAY 24.				
0	16 29 11.03	24.512	S. 18 33 9.5	78.82	0	18 29 30.14	25.336	S. 22 17 38.1	12.46
1	16 31 38.20	24.545	18 40 58.8	77.61	1	18 32 2.15	25.333	22 18 48.4	10.98
2	16 34 5.57	24.577	18 48 40.8	76.39	2	18 34 34.14	25.329	22 19 49.8	9.49
3	16 36 33.12	24.608	18 56 15.5	75.17	3	18 37 6.10	25.324	22 20 42.3	8.02
4	16 39 0.86	24.638	19 3 42.8	73.93	4	18 39 38.03	25.318	22 21 26.0	6.54
5	16 41 28.78	24.668	19 11 2.6	72.68	5	18 42 9.92	25.311	22 22 0.8	5.06
6	16 43 56.88	24.698	19 18 14.9	71.42	6	18 44 41.76	25.303	22 22 26.7	3.58
7	16 46 25.16	24.728	19 25 19.6	70.16	7	18 47 13.56	25.295	22 22 43.8	2.11
8	16 48 53.62	24.757	19 32 16.8	68.88	8	18 49 45.30	25.285	22 22 52.0	0.63
9	16 51 22.25	24.785	19 39 6.2	67.59	9	18 52 16.98	25.274	22 22 51.3	0.84
10	16 53 51.04	24.813	19 45 47.9	66.30	10	18 54 48.59	25.263	22 22 41.9	2.31
11	16 56 20.00	24.840	19 52 21.8	64.99	11	18 57 20.13	25.250	22 22 23.6	3.78
12	16 58 49.12	24.867	19 58 47.8	63.68	12	18 59 51.59	25.237	22 21 56.5	5.25
13	17 1 18.40	24.893	20 5 6.0	62.37	13	19 2 22.97	25.223	22 21 20.6	6.71
14	17 3 47.84	24.919	20 11 16.2	61.03	14	19 4 54.26	25.207	22 20 36.0	8.17
15	17 6 17.43	24.944	20 17 18.4	59.69	15	19 7 25.45	25.190	22 19 42.6	9.63
16	17 8 47.17	24.968	20 23 12.5	58.35	16	19 9 56.54	25.173	22 18 40.4	11.09
17	17 11 17.05	24.992	20 28 58.6	57.00	17	19 12 27.53	25.156	22 17 29.5	12.54
18	17 13 47.07	25.015	20 34 36.5	55.64	18	19 14 58.41	25.137	22 16 9.9	13.98
19	17 16 17.23	25.037	20 40 6.3	54.28	19	19 17 29.17	25.117	22 14 41.7	15.42
20	17 18 47.51	25.058	20 45 27.8	52.90	20	19 19 59.81	25.096	22 13 4.9	16.86
21	17 21 17.93	25.080	20 50 41.1	51.52	21	19 22 30.32	25.074	22 11 19.4	18.30
22	17 23 48.47	25.100	20 55 46.1	50.13	22	19 25 0.70	25.052	22 9 25.3	19.73
23	17 26 19.13	25.119	21 0 42.7	48.73	23	19 27 30.95	25.028	22 7 22.6	21.15
24	17 28 49.90	25.138	S. 21 53 30.9	47.33	24	19 30 1.04	25.003	S. 22 5 11.5	22.57

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 25.					WEDNESDAY 27.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	19 30 1 ⁰⁴	25 ⁰⁰³	S. 22 5 11 ⁵	22 ⁵⁷	0	21 25 59 ⁰⁰	23 ¹²⁸	S. 17 47 27 ⁸	81 ²⁵
1	19 32 30 ⁹⁹	24 ⁹⁸⁰	22 2 51 ⁸	23 ⁹⁸	1	21 28 17 ⁶³	23 ⁰⁸¹	17 39 17 ⁴	82 ²²
2	19 35 0 ⁸⁰	24 ⁹⁵⁴	22 0 23 ⁷	25 ³⁹	2	21 30 35 ⁹⁷	23 ⁰³³	17 31 1 ²	83 ¹⁸
3	19 37 30 ⁴⁴	24 ⁹²⁷	21 57 47 ¹	26 ⁸⁰	3	21 32 54 ⁰³	22 ⁹⁸⁶	17 22 39 ²	84 ¹³
4	19 39 59 ⁹²	24 ⁹⁰⁰	21 55 2 ¹	28 ²⁰	4	21 35 11 ⁸⁰	22 ⁹³⁸	17 14 11 ⁶	85 ⁰⁷
5	19 42 29 ²⁴	24 ⁸⁷³	21 52 8 ⁷	29 ⁵⁹	5	21 37 29 ²⁹	22 ⁸⁹¹	17 5 38 ⁴	85 ⁹⁹
6	19 44 58 ³⁹	24 ⁸⁴³	21 49 7 ⁰	30 ⁹⁷	6	21 39 46 ⁴⁹	22 ⁸⁴³	16 56 59 ⁷	86 ⁹⁰
7	19 47 27 ³⁶	24 ⁸¹³	21 45 57 ¹	32 ³⁴	7	21 42 3 ⁴⁰	22 ⁷⁹⁴	16 48 15 ⁶	87 ⁸¹
8	19 49 56 ¹⁵	24 ⁷⁸³	21 42 38 ⁹	33 ⁷²	8	21 44 20 ⁰²	22 ⁷⁴⁷	16 39 26 ⁰	88 ⁷⁰
9	19 52 24 ⁷⁵	24 ⁷⁵²	21 39 12 ⁵	35 ⁰⁸	9	21 46 36 ³⁶	22 ⁶⁹⁹	16 30 31 ²	89 ⁵⁸
10	19 54 53 ¹⁷	24 ⁷²⁰	21 35 37 ⁹	36 ⁴⁴	10	21 48 52 ⁴¹	22 ⁶⁵²	16 21 31 ¹	90 ⁴⁵
11	19 57 21 ³⁹	24 ⁶⁸⁷	21 31 55 ²	37 ⁷⁹	11	21 51 8 ¹⁸	22 ⁶⁰⁴	16 12 25 ⁸	91 ³⁰
12	19 59 49 ⁴¹	24 ⁶⁵³	21 28 4 ⁴	39 ¹³	12	21 53 23 ⁶⁶	22 ⁵⁵⁶	16 3 15 ⁵	92 ¹⁴
13	20 2 17 ²³	24 ⁶²⁰	21 24 5 ⁶	40 ⁴⁷	13	21 55 38 ⁸⁵	22 ⁵⁰⁸	15 54 0 ¹	93 ⁹⁷
14	20 4 44 ⁸⁵	24 ⁵⁸⁶	21 19 58 ⁸	41 ⁷⁹	14	21 57 53 ⁷⁶	22 ⁴⁶²	15 44 39 ⁸	93 ⁷⁸
15	20 7 12 ²⁶	24 ⁵⁵¹	21 15 44 ¹	43 ¹¹	15	22 0 8 ³⁹	22 ⁴¹⁴	15 35 14 ⁷	94 ⁵⁹
16	20 9 39 ⁴⁶	24 ⁵¹⁴	21 11 21 ⁵	44 ⁴²	16	22 2 22 ⁷³	22 ³⁶⁷	15 25 44 ⁷	95 ³⁹
17	20 12 6 ⁴³	24 ⁴⁷⁸	21 6 51 ¹	45 ⁷³	17	22 4 36 ⁷⁹	22 ³²⁰	15 16 10 ⁰	96 ¹⁸
18	20 14 33 ¹⁹	24 ⁴⁴¹	21 2 12 ⁸	47 ⁰³	18	22 6 50 ⁵⁷	22 ²⁷³	15 6 30 ⁶	96 ⁹⁴
19	20 16 59 ⁷²	24 ⁴⁰³	20 57 26 ⁸	48 ³⁰	19	22 9 4 ⁰⁷	22 ²²⁶	14 56 46 ⁷	97 ⁷⁰
20	20 19 26 ⁰²	24 ³⁶⁴	20 52 33 ²	49 ⁵⁷	20	22 11 17 ²⁸	22 ¹⁷⁹	14 46 58 ²	98 ⁴⁵
21	20 21 52 ⁰⁹	24 ³²⁶	20 47 31 ⁹	50 ⁸⁴	21	22 13 30 ²²	22 ¹³³	14 37 5 ³	99 ¹⁸
22	20 24 17 ⁹³	24 ²⁸⁷	20 42 23 ¹	52 ¹⁰	22	22 15 42 ⁸⁸	22 ⁰⁸⁷	14 27 8 ⁰	99 ⁹¹
23	20 26 43 ⁵³	24 ²⁴⁷	S. 20 37 6 ⁷	53 ³⁶	23	22 17 55 ²⁶	22 ⁰⁴⁰	S. 14 17 6 ⁴	100 ⁶¹
TUESDAY 26.					THURSDAY 28.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	20 29 8 ⁸⁹	24 ²⁰⁶	S. 20 31 42 ⁸	54 ⁵⁹	0	22 20 7 ³⁶	21 ⁹⁹⁴	S. 14 7 0 ⁷	101 ³⁰
1	20 31 34 ⁰⁰	24 ¹⁶⁵	20 26 11 ⁶	55 ⁸²	1	22 22 19 ¹⁹	21 ⁹⁴⁹	13 56 50 ⁸	101 ⁹⁹
2	20 33 58 ⁸⁷	24 ¹²⁴	20 20 33 ⁰	57 ⁰⁴	2	22 24 30 ⁷⁵	21 ⁹⁰³	13 46 36 ⁸	102 ⁶⁶
3	20 36 23 ⁴⁹	24 ⁰⁸²	20 14 47 ¹	58 ²⁶	3	22 26 42 ⁰³	21 ⁸⁵⁸	13 36 18 ⁹	103 ³²
4	20 38 47 ⁸⁵	24 ⁰³⁹	20 8 53 ⁹	59 ⁴⁶	4	22 28 53 ⁰⁵	21 ⁸¹⁴	13 25 57 ⁰	103 ⁹⁸
5	20 41 11 ⁹⁶	23 ⁹⁹⁷	20 2 53 ⁶	60 ⁶⁴	5	22 31 3 ⁸⁰	21 ⁷⁶⁹	13 15 31 ²	104 ⁶²
6	20 43 35 ⁸²	23 ⁹⁵⁴	19 56 46 ²	61 ⁸³	6	22 33 14 ²⁸	21 ⁷²⁴	13 5 1 ⁶	105 ²⁴
7	20 45 59 ⁴¹	23 ⁹¹⁰	19 50 31 ⁷	63 ⁰⁰	7	22 35 24 ⁴⁹	21 ⁶⁸⁰	12 54 28 ³	105 ⁸⁶
8	20 48 22 ⁷⁴	23 ⁸⁶⁷	19 44 10 ²	64 ¹⁶	8	22 37 34 ⁴⁴	21 ⁶³⁷	12 43 51 ³	106 ⁴⁶
9	20 50 45 ⁸¹	23 ⁸²³	19 37 41 ⁸	65 ³¹	9	22 39 44 ¹³	21 ⁵⁹³	12 33 10 ⁸	107 ⁰⁵
10	20 53 8 ⁶²	23 ⁷⁷⁸	19 31 6 ⁵	66 ⁴⁵	10	22 41 53 ⁵⁶	21 ⁵⁴⁹	12 22 26 ⁷	107 ⁶³
11	20 55 31 ¹⁵	23 ⁷³³	19 24 24 ⁴	67 ⁵⁸	11	22 44 2 ⁷²	21 ⁵⁰⁶	12 11 39 ²	108 ²⁰
12	20 57 53 ⁴²	23 ⁶⁸⁸	19 17 35 ⁶	68 ⁶⁹	12	22 46 11 ⁶³	21 ⁴⁶⁴	12 04 ⁸	108 ⁷⁶
13	21 0 15 ⁴¹	23 ⁶⁴³	19 10 40 ¹	69 ⁸⁰	13	22 48 20 ²⁹	21 ⁴²²	11 49 54 ¹	109 ³⁰
14	21 2 37 ¹³	23 ⁵⁹⁸	19 3 38 ⁰	70 ⁹⁰	14	22 50 28 ⁶⁹	21 ³⁸⁰	11 38 56 ⁷	109 ⁸³
15	21 4 58 ⁵⁸	23 ⁵⁵²	18 56 29 ³	71 ⁹⁸	15	22 52 36 ⁸⁵	21 ³³⁸	11 27 56 ²	110 ³⁴
16	21 7 19 ⁷⁵	23 ⁵⁰⁵	18 49 14 ²	73 ⁰⁵	16	22 54 44 ⁷⁵	21 ²⁹⁷	11 16 52 ⁶	110 ⁸⁶
17	21 9 40 ⁶⁴	23 ⁴⁵⁸	18 41 52 ⁷	74 ¹²	17	22 56 52 ⁴¹	21 ²⁵⁶	11 5 45 ⁹	111 ³⁶
18	21 12 1 ²⁵	23 ⁴¹²	18 34 24 ⁸	75 ¹⁸	18	22 58 59 ⁸²	21 ²¹⁶	10 54 36 ³	111 ⁸³
19	21 14 21 ⁵⁸	23 ³⁶⁵	18 26 50 ⁶	76 ²²	19	23 1 7 ⁰⁰	21 ¹⁷⁶	10 43 23 ⁹	112 ³¹
20	21 16 41 ⁶³	23 ³¹⁸	18 19 10 ²	77 ²⁵	20	23 3 13 ⁹³	21 ¹³⁵	10 32 8 ⁶	112 ⁷⁸
21	21 19 1 ⁴⁰	23 ²⁷²	18 11 23 ⁶	78 ²⁷	21	23 5 20 ⁶²	21 ⁰⁹⁶	10 20 50 ⁶	113 ²³
22	21 21 20 ⁸⁹	23 ²²⁴	18 3 31 ⁰	79 ²⁷	22	23 7 27 ⁰⁸	21 ⁰⁵⁸	10 9 29 ⁹	113 ⁶⁷
23	21 23 40 ⁰⁹	23 ¹⁷⁶	17 55 32 ⁴	80 ²⁷	23	23 9 33 ³¹	21 ⁰¹⁸	9 58 6 ⁶	114 ¹⁰
24	21 25 59 ⁰⁰	23 ¹²⁸	S. 17 47 27 ⁸	81 ²⁵	24	23 11 39 ³⁰	20 ⁹⁸⁰	S. 9 46 40 ⁷	114 ⁵²

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 29.					SUNDAY 31.				
0	23 11 39.30	20.980	S. 9 46 40.7	114.52	0	0 48 48.22	19.681	S. 0 9 41.2	121.96
1	23 13 45.07	20.943	9 35 12.4	114.92	1	0 50 46.26	19.665	N. 0 2 30.3	121.88
2	23 15 50.61	20.905	9 23 41.7	115.31	2	0 52 44.20	19.650	0 14 41.3	121.78
3	23 17 55.93	20.868	9 12 8.7	115.68	3	0 54 42.06	19.636	0 26 51.7	121.68
4	23 20 1.02	20.831	9 03 35.5	116.06	4	0 56 39.83	19.622	0 39 1.4	121.56
5	23 22 5.90	20.796	8 48 56.0	116.42	5	0 58 37.52	19.608	0 51 10.4	121.43
6	23 24 10.57	20.760	8 37 16.4	116.77	6	1 0 35.13	19.596	1 3 18.6	121.31
7	23 26 15.02	20.724	8 25 34.8	117.10	7	1 2 32.67	19.584	1 15 26.1	121.18
8	23 28 19.26	20.689	8 13 51.2	117.43	8	1 4 30.14	19.572	1 27 32.7	121.03
9	23 30 23.29	20.655	8 2 5.6	117.76	9	1 6 27.53	19.560	1 39 38.4	120.87
10	23 32 27.12	20.622	7 50 18.1	118.06	10	1 8 24.86	19.550	1 51 43.1	120.70
11	23 34 30.75	20.588	7 38 28.9	118.35	11	1 10 22.13	19.539	2 3 46.8	120.53
12	23 36 34.17	20.554	7 26 37.9	118.63	12	1 12 19.33	19.529	2 15 49.4	120.34
13	23 38 37.40	20.522	7 14 45.1	118.90	13	1 14 16.48	19.520	2 27 50.9	120.15
14	23 40 40.43	20.490	7 2 51.1	119.17	14	1 16 13.57	19.511	2 39 51.2	119.95
15	23 42 43.28	20.458	6 50 55.3	119.42	15	1 18 10.61	19.502	2 51 50.3	119.74
16	23 44 45.93	20.427	6 38 58.1	119.65	16	1 20 7.59	19.493	3 3 48.1	119.53
17	23 46 48.40	20.396	6 26 59.5	119.88	17	1 22 4.53	19.487	3 15 44.6	119.30
18	23 48 50.68	20.366	6 14 59.5	120.10	18	1 24 1.43	19.480	3 27 39.7	119.08
19	23 50 52.79	20.336	6 2 58.3	120.31	19	1 25 58.29	19.473	3 39 33.5	118.83
20	23 52 54.71	20.306	5 50 55.8	120.51	20	1 27 55.10	19.466	3 51 25.7	118.58
21	23 54 56.46	20.278	5 38 52.2	120.69	21	1 29 51.88	19.461	4 3 16.4	118.33
22	23 56 58.04	20.249	5 26 47.5	120.87	22	1 31 48.63	19.456	4 15 5.6	118.06
23	23 58 59.45	20.221	S. 5 14 41.8	121.03	23	1 33 45.35	19.451	N. 4 26 53.1	117.78
SATURDAY 30.					MONDAY, APRIL 1.				
0	0 1 0.69	20.193	S. 5 2 35.1	121.19	0	1 35 42.04	19.446	N. 4 38 39.0	117.50
1	0 3 1.77	20.167	4 50 27.5	121.33					
2	0 5 2.69	20.140	4 38 19.1	121.47					
3	0 7 3.45	20.113	4 26 9.9	121.59					
4	0 9 4.05	20.088	4 14 0.0	121.71					
5	0 11 4.51	20.063	4 1 49.4	121.82					
6	0 13 4.81	20.038	3 49 38.2	121.91					
7	0 15 4.97	20.015	3 37 26.5	121.99					
8	0 17 4.99	19.992	3 25 14.3	122.07					
9	0 19 4.87	19.968	3 13 1.7	122.13					
10	0 21 4.61	19.946	3 0 48.7	122.19					
11	0 23 4.22	19.923	2 48 35.4	122.24					
12	0 25 3.69	19.902	2 36 21.8	122.28					
13	0 27 3.04	19.881	2 24 8.1	122.30					
14	0 29 2.26	19.860	2 11 54.2	122.32					
15	0 31 1.36	19.840	1 59 40.3	122.32					
16	0 33 0.34	19.820	1 47 26.4	122.32					
17	0 34 59.20	19.801	1 35 12.5	122.31					
18	0 36 57.95	19.783	1 22 58.7	122.28					
19	0 38 56.59	19.764	1 10 45.1	122.26					
20	0 40 55.12	19.746	0 58 31.6	122.22					
21	0 42 53.54	19.729	0 46 18.5	122.16					
22	0 44 51.87	19.713	0 34 5.7	122.11					
23	0 46 50.09	19.696	0 21 53.2	122.04					
24	0 48 48.22	19.681	S. 0 9 41.2	121.96					

PHASES OF THE MOON.

Mar.		h	m
1	● New Moon	-	10 0.7
9) First Quarter	-	5 59.4
16	○ Full Moon	-	23 47.5
23	(Last Quarter	-	18 54.4
30	● New Moon	-	23 36.8

Mar.		h
8	(Apogee	- 21
21	(Perigee	- 0

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
3	SUN W.	20 4 58	3086	21 33 25	3089	23 1 48	3095	24 30 4	3102
	Aldebaran E.	65 17 17	2655	63 39 37	2669	62 2 16	2682	60 25 12	2696
	Pollux E.	109 25 47	2683	107 48 45	2696	106 11 59	2709	104 35 31	2722
4	SUN W.	31 48 43	3153	33 15 49	3164	34 42 41	3176	36 9 19	3188
	Aldebaran E.	52 24 24	2763	50 49 8	2777	49 14 10	2790	47 39 29	2804
	Pollux E.	96 37 26	2787	95 2 41	2800	93 28 13	2813	91 54 2	2825
5	SUN W.	43 18 51	3249	44 44 2	3261	46 8 59	3273	47 33 42	3284
	Aldebaran E.	39 50 21	2868	38 17 21	2881	36 44 38	2893	35 12 10	2905
	Pollux E.	84 7 13	2889	82 34 40	2901	81 2 22	2913	79 30 20	2925
	Saturn E.	106 36 31	2839	105 2 54	2852	103 29 33	2863	101 56 26	2874
6	SUN W.	54 33 59	3339	55 57 25	3350	57 20 39	3359	58 43 42	3370
	Mars W.	27 50 2	3293	29 14 22	3297	30 38 37	3303	32 2 45	3309
	Pollux E.	71 53 46	2981	70 23 9	2991	68 52 45	3001	67 22 33	3011
	Saturn E.	94 14 29	2928	92 42 45	2938	91 11 14	2947	89 39 55	2957
	Regulus E.	107 41 43	2955	106 10 34	2965	104 39 37	2974	103 8 52	2983
7	SUN W.	65 36 20	3411	66 58 24	3418	68 20 20	3425	69 42 8	3431
	Mars W.	39 1 46	3337	40 25 15	3342	41 48 38	3347	43 11 55	3351
	α Arietis W.	21 47 42	4333	22 54 4	4185	24 2 44	4062	25 13 23	3959
	Venus W.	21 37 52	3683	22 54 57	3654	24 12 33	3629	25 30 36	3609
	Pollux E.	59 54 30	3055	58 25 25	3063	56 56 30	3071	55 27 45	3078
	Saturn E.	82 6 3	2996	80 35 45	3003	79 5 36	3010	77 35 35	3016
	Regulus E.	95 37 47	3022	94 8 2	3030	92 38 26	3036	91 8 58	3042
8	SUN W.	76 29 34	3455	77 50 48	3458	79 11 59	3462	80 33 6	3464
	Mars W.	50 7 7	3370	51 29 58	3372	52 52 46	3374	54 15 32	3376
	Venus W.	32 5 27	3542	33 25 5	3534	34 44 52	3526	36 4 47	3518
	α Arietis W.	31 27 50	3635	32 45 47	3592	34 4 30	3556	35 23 52	3524
	Pollux E.	48 6 7	3110	46 38 10	3116	45 10 20	3122	43 42 37	3127
	Saturn E.	70 7 10	3039	68 37 45	3041	67 8 23	3044	65 39 5	3047
	Regulus E.	83 43 16	3065	82 14 23	3068	80 45 34	3070	79 16 48	3073
9	SUN W.	87 18 14	3468	88 39 14	3467	90 0 15	3465	91 21 18	3463
	Mars W.	61 9 5	3377	62 31 48	3375	63 54 33	3373	65 17 20	3371
	Venus W.	42 46 17	3487	44 6 56	3481	45 27 41	3474	46 48 34	3468
	α Arietis W.	42 8 33	3404	43 30 45	3386	44 53 18	3369	46 16 10	3352
	Pollux E.	36 25 36	3153	34 58 30	3158	33 31 31	3164	32 4 39	3170
	Saturn E.	58 13 6	3051	56 43 56	3050	55 14 45	3048	53 45 32	3047
	Regulus E.	71 53 30	3077	70 24 52	3076	68 56 13	3075	67 27 33	3073
10	SUN W.	98 7 15	3446	99 28 39	3442	100 50 8	3436	102 11 44	3430
	Mars W.	72 12 5	3352	73 35 16	3347	74 58 33	3341	76 21 57	3335
	Venus W.	53 34 52	3432	54 56 32	3424	56 18 21	3415	57 40 20	3408
	α Arietis W.	53 14 57	3281	54 39 31	3268	56 4 20	3255	57 29 24	3242
	Aldebaran W.	20 18 58	3074	21 47 39	3067	23 16 29	3059	24 45 29	3052
	Saturn E.	46 18 47	3031	44 49 13	3026	43 19 33	3022	41 49 48	3016
	Regulus E.	60 3 30	3058	58 34 29	3053	57 5 22	3049	55 36 10	3043
	Spica E.	113 55 41	3091	112 27 21	3086	110 58 54	3080	109 30 20	3073
11	SUN W.	109 1 36	3393	110 24 0	3384	111 46 35	3375	113 9 20	3365
	Mars W.	83 20 56	3297	84 45 11	3288	86 9 36	3278	87 34 13	3269

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
3	SUN W.	25 58 11	3111	27 26 7	3120	28 53 52	3131	30 21 24	3142
	Aldebaran E.	58 48 26	2710	57 11 59	2722	55 35 49	2737	53 59 58	2750
	Pollux E.	102 59 20	2734	101 23 25	2747	99 47 48	2761	98 12 29	2773
4	SUN W.	37 35 42	3200	39 1 51	3213	40 27 45	3225	41 53 25	3236
	Aldebaran E.	46 5 6	2816	44 30 59	2830	42 57 10	2842	41 23 37	2855
	Pollux E.	90 20 7	2838	88 46 29	2852	87 13 8	2863	85 40 2	2876
5	SUN W.	48 58 12	3296	50 22 28	3307	51 46 31	3319	53 10 21	3329
	Aldebaran E.	33 39 58	2917	32 8 1	2929	30 36 19	2941	29 4 52	2953
	Pollux E.	77 58 33	2936	76 27 0	2947	74 55 41	2959	73 24 37	2969
	Saturn E.	100 23 34	2886	98 50 57	2897	97 18 34	2908	95 46 25	2918
6	SUN W.	60 6 33	3378	61 29 15	3387	62 51 46	3395	64 14 8	3404
	Mars W.	33 26 46	3314	34 50 41	3319	36 14 30	3326	37 38 11	3332
	Pollux E.	65 52 34	3020	64 22 46	3029	62 53 9	3039	61 23 44	3047
	Saturn E.	88 8 48	2965	86 37 51	2973	85 7 5	2981	83 36 29	2989
	Regulus E.	101 38 18	2992	100 7 55	3001	98 37 43	3008	97 7 40	3016
7	SUN W.	71 3 50	3438	72 25 24	3442	73 46 53	3447	75 8 16	3452
	Mars W.	44 35 7	3357	45 58 13	3360	47 21 15	3364	48 44 13	3367
	α Arietis W.	26 25 43	3873	27 39 30	3799	28 54 33	3735	30 10 43	3681
	Venus W.	26 49 1	3591	28 7 45	3576	29 26 46	3563	30 46 1	3553
	Pollux E.	53 59 9	3085	52 30 41	3092	51 2 22	3099	49 34 11	3105
	Saturn E.	76 5 42	3021	74 35 55	3026	73 6 14	3031	71 36 40	3035
	Regulus E.	89 39 37	3047	88 10 23	3052	86 41 15	3057	85 12 13	3061
8	SUN W.	81 54 10	3465	83 15 13	3467	84 36 14	3468	85 57 14	3468
	Mars W.	55 38 16	3377	57 0 59	3378	58 23 41	3378	59 46 23	3378
	Venus W.	37 24 51	3512	38 45 2	3506	40 5 20	3499	41 25 45	3493
	α Arietis W.	36 43 50	3495	38 4 20	3470	39 25 18	3446	40 46 43	3423
	Pollux E.	42 15 0	3133	40 47 30	3138	39 20 6	3143	37 52 48	3148
	Saturn E.	64 9 50	3048	62 40 37	3050	61 11 26	3051	59 42 16	3051
	Regulus E.	77 48 6	3074	76 19 25	3076	74 50 46	3077	73 22 8	3077
9	SUN W.	92 42 23	3462	94 3 30	3458	95 24 41	3455	96 45 55	3450
	Mars W.	66 40 10	3369	68 3 2	3365	69 25 59	3361	70 49 0	3358
	Venus W.	48 9 34	3461	49 30 42	3454	50 51 57	3447	52 13 20	3439
	α Arietis W.	47 39 21	3337	49 2 50	3322	50 26 36	3307	51 50 39	3294
	Pollux E.	30 37 54	3178	29 11 18	3186	27 44 52	3195	26 18 37	3205
	Saturn E.	52 16 18	3044	50 47 0	3043	49 17 40	3039	47 48 16	3035
	Regulus E.	65 58 51	3071	64 30 6	3069	63 1 18	3065	61 32 26	3062
10	SUN W.	103 33 27	3423	104 55 17	3416	106 17 15	3409	107 39 21	3401
	Mars W.	77 45 28	3328	79 9 7	3321	80 32 54	3313	81 56 50	3305
	Venus W.	59 2 28	3398	60 24 47	3389	61 47 16	3379	63 9 56	3369
	α Arietis W.	58 54 43	3231	60 20 16	3218	61 46 4	3204	63 12 8	3193
	Aldebaran W.	26 14 38	3044	27 43 56	3035	29 13 25	3028	30 43 3	3019
	Saturn E.	40 19 55	3010	38 49 55	3004	37 19 47	2997	35 49 31	2990
	Regulus E.	54 6 51	3037	52 37 24	3031	51 7 50	3024	49 38 7	3018
	Spica E.	108 1 38	3067	106 32 48	3060	105 3 49	3052	103 34 40	3044
11	SUN W.	114 32 16	3356	115 55 23	3345	117 18 42	3334	118 42 14	3324
	Mars W.	88 59 1	3259	90 24 1	3248	91 49 13	3237	93 14 38	3225

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
11	α Arietis W.	64 38 25	3180	66 4 58	3168	67 31 46	3156	68 58 48	3143
	Venus W.	64 32 48	3359	65 55 51	3348	67 19 7	3338	68 42 35	3325
	Aldebaran W.	32 12 52	3011	33 42 51	3001	35 13 2	2992	36 43 25	2982
	Saturn E.	34 19 6	2982	32 48 31	2974	31 17 46	2966	29 46 51	2957
	Regulus E.	48 8 16	3009	46 38 15	3002	45 8 5	2993	43 37 44	2985
	Spica E.	102 5 22	3036	100 35 54	3027	99 6 15	3018	97 36 24	3009
12	Sun W.	120 5 58	3312	121 29 56	3300	122 54 7	3288	124 18 32	3276
	Mars W.	94 40 17	3214	96 6 9	3202	97 32 16	3190	98 58 37	3178
	α Arietis W.	76 17 52	3078	77 46 28	3065	79 15 20	3052	80 44 28	3039
	Venus W.	75 43 23	3265	77 8 16	3251	78 33 25	3237	79 58 50	3224
	Aldebaran W.	44 18 28	2929	45 50 10	2917	47 22 7	2906	48 54 18	2894
	Regulus E.	36 3 13	2939	34 31 43	2928	32 59 59	2918	31 28 3	2908
	Spica E.	90 4 10	2957	88 33 3	2946	87 1 42	2934	85 30 6	2923
13	α Arietis W.	88 14 18	2972	89 45 6	2958	91 16 11	2944	92 47 34	2931
	Venus W.	87 10 3	3152	88 37 10	3138	90 4 34	3122	91 32 17	3107
	Aldebaran W.	56 39 18	2829	58 13 8	2815	59 47 16	2801	61 21 42	2787
	Spica E.	77 48 18	2860	76 15 8	2847	74 41 41	2834	73 7 57	2821
14	α Arietis W.	100 28 39	2866	102 1 42	2853	103 35 1	2841	105 8 36	2828
	Venus W.	98 55 28	3030	100 25 3	3015	101 54 57	3000	103 25 10	2985
	Aldebaran W.	69 18 30	2716	70 54 48	2701	72 31 26	2687	74 8 23	2672
	Pollux W.	25 46 5	2853	27 19 24	2825	28 53 19	2798	30 27 50	2772
	Spica E.	65 14 59	2754	63 39 31	2741	62 3 45	2728	60 27 42	2714
	Antares E.	111 8 40	2766	109 33 28	2745	107 57 48	2729	106 21 46	2713
15	Aldebaran W.	82 18 4	2600	83 56 59	2585	85 36 14	2571	87 15 49	2558
	Pollux W.	38 28 5	2666	40 5 31	2647	41 43 22	2629	43 21 38	2610
	Spica E.	52 23 6	2652	50 45 21	2640	49 7 20	2628	47 29 3	2618
	Antares E.	98 16 34	2638	96 38 31	2624	95 0 8	2610	93 21 26	2595
16	Aldebaran W.	95 38 29	2489	97 19 58	2477	99 1 44	2463	100 43 49	2451
	Pollux W.	51 38 50	2530	53 19 22	2514	55 0 16	2500	56 41 29	2486
	Saturn W.	29 27 59	2473	31 9 50	2460	32 52 0	2447	34 34 28	2434
	Spica E.	39 14 17	2573	37 34 45	2567	35 55 5	2563	34 15 19	2559
	Antares E.	85 3 7	2527	83 22 31	2513	81 41 38	2502	80 0 28	2489
	Jupiter E.	112 19 54	2523	110 39 13	2510	108 58 14	2497	107 16 56	2484
17	Pollux W.	65 12 20	2422	66 55 24	2410	68 38 44	2399	70 22 20	2389
	Saturn W.	43 11 10	2376	44 55 19	2365	46 39 44	2355	48 24 24	2345
	Regulus W.	29 12 24	2409	30 55 46	2397	32 39 25	2384	34 23 22	2373
	Antares E.	71 30 31	2435	69 47 46	2425	68 4 47	2416	66 21 35	2408
	Jupiter E.	98 46 6	2424	97 3 6	2414	95 19 51	2403	93 36 21	2393
	α Aquilæ E.	115 39 50	3187	114 13 25	3155	112 46 22	3125	111 18 43	3097
18	Pollux W.	79 3 59	2342	80 48 58	2333	82 34 9	2326	84 19 31	2319
	Saturn W.	57 11 11	2300	58 57 10	2292	60 43 21	2285	62 29 42	2278
	Regulus W.	43 6 57	2324	44 52 22	2316	46 37 58	2307	48 23 47	2300
	Antares E.	57 42 42	2372	55 58 27	2366	54 14 3	2362	52 29 33	2357
	Jupiter E.	84 55 20	2348	83 10 30	2340	81 25 28	2332	79 40 15	2325
	α Aquilæ E.	103 52 46	2987	102 22 18	2970	100 51 28	2956	99 20 20	2942

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
11	α Arietis W.	70 26 6	3130	71 53 39	3117	73 21 28	3105	74 49 32	3091
	Venus W.	70 6 17	3314	71 30 12	3302	72 54 21	3289	74 18 45	3277
	Aldebaran W.	38 14 0	2973	39 44 47	2962	41 15 47	2951	42 47 1	2941
	Saturn E.	28 15 45	2948	26 44 27	2939	25 12 57	2929	23 41 15	2919
	Regulus E.	42 7 13	2977	40 36 31	2967	39 5 37	2958	37 34 31	2948
	Spica E.	96 6 22	3000	94 36 9	2989	93 5 42	2979	91 35 3	2968
12	Sun W.	125 43 12	3264	127 8 6	3251	128 33 15	3237	129 58 40	3223
	Mars W.	100 25 13	3164	101 52 5	3151	103 19 13	3138	104 46 36	3125
	α Arietis W.	82 13 53	3026	83 43 34	3012	85 13 32	2998	86 43 17	2985
	Venus W.	81 24 31	3210	82 50 28	3196	84 16 42	3181	85 43 44	3167
	Aldebaran W.	50 26 45	2880	51 59 29	2868	53 32 29	2855	55 5 45	2842
	Regulus E.	29 55 54	2898	28 23 32	2887	26 50 56	2876	25 18 7	2866
	Spica E.	83 58 16	2910	82 26 10	2898	80 53 49	2885	79 21 11	2873
13	α Arietis W.	94 19 13	2918	95 51 9	2905	97 23 22	2891	98 55 52	2878
	Venus W.	93 0 18	3092	94 28 37	3077	95 57 15	3061	97 26 12	3046
	Aldebaran W.	62 56 27	2773	64 31 30	2760	66 6 51	2745	67 42 31	2731
	Spica E.	71 33 56	2808	69 59 38	2794	68 25 2	2781	66 50 9	2768
14	α Arietis W.	106 42 28	2817	108 16 34	2805	109 50 56	2794	111 25 32	2783
	Venus W.	104 55 41	2969	106 26 32	2955	107 57 41	2940	109 29 9	2925
	Aldebaran W.	75 45 40	2657	77 23 17	2643	79 1 13	2629	80 39 28	2614
	Pollux W.	32 2 54	2750	33 38 28	2727	35 14 32	2705	36 51 5	2685
	Spica E.	58 51 21	2701	57 14 43	2688	55 37 47	2676	54 0 35	2663
	Antares E.	104 45 24	2698	103 8 42	2683	101 31 39	2668	99 54 16	2654
15	Aldebaran W.	88 55 42	2543	90 35 55	2529	92 16 28	2516	93 57 19	2502
	Pollux W.	45 0 19	2593	46 39 23	2577	48 18 50	2561	49 58 39	2545
	Spica E.	45 50 32	2607	44 11 47	2598	42 32 49	2589	40 53 39	2580
	Antares E.	91 42 24	2581	90 3 3	2567	88 23 23	2553	86 43 24	2540
16	Aldebaran W.	102 26 11	2438	104 8 51	2427	105 51 47	2415	107 35 0	2403
	Pollux W.	58 23 2	2472	60 4 54	2459	61 47 5	2446	63 29 34	2434
	Saturn W.	36 17 14	2422	38 0 18	2410	39 43 38	2398	41 27 16	2387
	Spica E.	32 35 28	2558	30 55 35	2559	29 15 44	2562	27 35 57	2569
	Antares E.	78 19 0	2478	76 37 16	2467	74 55 16	2456	73 13 1	2445
	Jupiter E.	105 35 20	2472	103 53 27	2459	102 11 16	2448	100 28 49	2436
17	Pollux W.	72 6 11	2378	73 50 18	2368	75 34 38	2359	77 19 12	2350
	Saturn W.	50 9 18	2335	51 54 27	2326	53 39 49	2317	55 25 24	2309
	Regulus W.	36 7 35	2362	37 52 4	2352	39 36 48	2342	41 21 46	2333
	Antares E.	64 38 11	2398	62 54 34	2391	61 10 47	2384	59 26 49	2378
	Jupiter E.	91 52 36	2383	90 8 37	2373	88 24 24	2365	86 39 59	2355
	α Aquilæ E.	109 50 30	3072	108 21 46	3047	106 52 32	3026	105 22 52	3005
18	Pollux W.	86 5 3	2312	87 50 45	2306	89 36 36	2300	91 22 36	2295
	Saturn W.	64 16 13	2272	66 2 54	2266	67 49 43	2260	69 36 42	2255
	Regulus W.	50 9 46	2294	51 55 55	2287	53 42 14	2281	55 28 41	2274
	Antares E.	50 44 57	2355	49 0 17	2353	47 15 34	2350	45 30 48	2350
	Jupiter E.	77 54 52	2318	76 9 19	2313	74 23 38	2306	72 37 47	2300
	α Aquilæ E.	97 48 54	2930	96 17 13	2920	94 45 19	2911	93 13 14	2903

MEAN TIME.									
LUNAR DISTANCES.									
Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
19	Pollux W.	93 8 43	2289	94 54 58	2285	96 41 19	2281	98 27 46	2278
	Saturn W.	71 23 48	2250	73 11 1	2245	74 58 21	2241	76 45 47	2237
	Regulus W.	57 15 18	2270	59 2 2	2265	60 48 53	2260	62 35 51	2257
	Antares E.	43 46 2	2350	42 1 16	2353	40 16 33	2355	38 31 54	2359
	Jupiter E.	70 51 48	2296	69 5 42	2291	67 19 29	2287	65 33 10	2283
	α Aquilæ E.	91 40 59	2898	90 8 37	2892	88 36 8	2890	87 3 36	2887
20	Pollux W.	107 21 5	2267	109 7 53	2266	110 54 42	2266	112 41 31	2266
	Saturn W.	85 44 8	2225	87 31 58	2224	89 19 50	2223	91 7 44	2222
	Regulus W.	71 31 54	2243	73 19 17	2241	75 6 43	2241	76 54 10	2239
	Spica W.	18 44 13	2553	20 24 12	2503	22 5 21	2463	23 47 26	2433
	Antares E.	29 51 11	2415	28 7 57	2434	26 25 11	2460	24 43 2	2492
	Jupiter E.	56 40 21	2269	54 53 36	2268	53 6 49	2266	51 20 0	2266
	α Aquilæ E.	79 21 1	2903	77 48 45	2910	76 16 39	2920	74 44 45	2931
21	Saturn W.	100 7 19	2223	101 55 12	2224	103 43 3	2226	105 30 52	2228
	Regulus W.	85 51 37	2241	87 39 4	2241	89 26 30	2243	91 13 54	2245
	Spica W.	32 26 22	2348	34 11 12	2339	35 56 15	2331	37 41 29	2326
	Jupiter E.	42 25 48	2266	40 38 59	2268	38 52 12	2269	37 5 27	2271
	α Aquilæ E.	67 9 34	3016	65 39 41	3039	64 10 17	3066	62 41 26	3096
	Sun E.	126 48 0	2570	125 8 24	2571	123 28 49	2571	121 49 14	2573
22	Regulus W.	100 10 6	2257	101 57 9	2260	103 44 7	2264	105 31 0	2268
	Spica W.	46 29 5	2313	48 14 45	2313	50 0 25	2314	51 46 4	2314
	α Aquilæ E.	55 27 16	2392	54 2 55	2343	52 39 33	2300	51 17 17	2346
	Sun E.	113 31 55	2583	111 52 37	2585	110 13 22	2589	108 34 12	2593
23	Spica W.	60 33 51	2325	62 19 14	2328	64 4 32	2331	65 49 46	2335
	α Aquilæ E.	44 45 46	3890	43 32 16	4006	42 20 42	4134	41 11 13	4278
	Sun E.	100 19 40	2613	98 41 2	2618	97 2 31	2623	95 24 7	2628
24	Spica W.	74 34 31	2356	76 19 9	2361	78 3 40	2366	79 48 3	2371
	Antares W.	29 6 55	2486	30 48 28	2476	32 30 15	2467	34 12 15	2461
	Sun E.	87 13 51	2655	85 36 11	2660	83 58 37	2666	82 21 12	2672
25	Spica W.	88 28 9	2399	90 11 45	2404	91 55 14	2410	93 38 34	2417
	Antares W.	42 43 42	2451	44 26 4	2450	46 8 27	2453	47 50 46	2455
	Sun E.	74 16 12	2704	72 39 37	2711	71 3 12	2717	69 26 55	2725
26	Spica W.	102 12 59	2449	103 55 24	2456	105 37 39	2464	107 19 43	2470
	Antares W.	56 21 30	2471	58 3 24	2476	59 45 11	2480	61 26 53	2485
	Jupiter W.	27 40 58	2443	29 23 31	2449	31 5 56	2456	32 48 11	2462
	Sun E.	61 27 53	2761	59 52 34	2768	58 17 24	2776	56 42 25	2785
27	Antares W.	69 53 29	2512	71 34 25	2520	73 15 11	2525	74 55 49	2531
	Jupiter W.	41 17 10	2496	42 58 29	2502	44 39 39	2510	46 20 38	2517
	Sun E.	48 50 10	2827	47 16 17	2836	45 42 36	2845	44 9 7	2855
28	Antares W.	83 16 38	2567	84 56 18	2574	86 35 48	2583	88 15 6	2591
	Jupiter W.	54 43 6	2554	56 23 4	2562	58 2 51	2569	59 42 28	2578
	Sun E.	36 24 58	2909	34 52 51	2922	33 21 0	2935	31 49 25	2949

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
			^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
19	Pollux	W.	100 14 18	2275	102 0 54	2272	103 47 35	2270	105 34 19	2268
	Saturn	W.	78 33 19	2235	80 20 55	2231	82 8 36	2229	83 56 20	2227
	Regulus	W.	64 22 54	2253	66 10 3	2250	67 57 16	2247	69 44 33	2245
	Antares	E.	36 47 21	2366	35 2 58	2374	33 18 46	2384	31 34 49	2398
	Jupiter	E.	63 46 45	2279	62 0 15	2276	60 13 41	2273	58 27 2	2272
	α Aquilæ	E.	85 31 1	2887	83 58 26	2889	82 25 53	2892	80 53 24	2897
20	Pollux	W.	114 28 21	2266	116 15 10	2267	118 1 58	2269	119 48 43	2272
	Saturn	W.	92 55 39	2222	94 43 34	2221	96 31 30	2222	98 19 25	2223
	Regulus	W.	78 41 39	2239	80 29 9	2239	82 16 39	2239	84 4 8	2239
	Spica	W.	25 30 14	2408	27 13 38	2387	28 57 31	2371	30 41 47	2358
	Antares	E.	23 1 38	2533	21 21 10	2585	19 41 54	2652	18 4 10	2741
	Jupiter	E.	49 33 10	2266	47 46 20	2265	45 59 29	2265	44 12 38	2266
	α Aquilæ	E.	73 13 5	2944	71 41 42	2958	70 10 37	2975	68 39 53	2995
21	Saturn	W.	107 18 38	2230	109 6 21	2232	110 54 1	2235	112 41 36	2237
	Regulus	W.	93 1 15	2247	94 48 33	2249	96 35 48	2251	98 22 59	2254
	Spica	W.	39 26 50	2322	41 12 18	2318	42 57 51	2316	44 43 27	2315
	Jupiter	E.	35 18 45	2272	33 32 5	2275	31 45 29	2277	29 58 56	2280
	α Aquilæ	E.	61 13 11	3127	59 45 34	3163	58 18 40	3202	56 52 33	3244
	SUN	E.	120 9 42	2574	118 30 11	2576	116 50 43	2577	115 11 17	2580
22	Regulus	W.	107 17 47	2271	109 4 29	2274	110 51 6	2279	112 37 36	2283
	Spica	W.	53 31 43	2316	55 17 19	2317	57 2 53	2320	58 48 24	2322
	α Aquilæ	E.	49 56 11	3533	48 36 23	3608	47 17 57	3693	46 1 2	3787
	SUN	E.	106 55 7	2596	105 16 7	2600	103 37 12	2604	101 58 23	2609
23	Spica	W.	67 34 55	2339	69 19 58	2343	71 4 55	2347	72 49 46	2351
	α Aquilæ	E.	40 4 0	4440	38 59 15	4623	37 57 10	4827	36 57 56	5062
	SUN	E.	93 45 50	2632	92 7 39	2638	90 29 36	2643	88 51 40	2649
24	Spica	W.	81 32 20	2376	83 16 29	2382	85 0 30	2387	86 44 24	2393
	Antares	W.	35 54 23	2456	37 36 38	2453	39 18 57	2451	41 1 19	2450
	SUN	E.	80 43 55	2678	79 6 46	2685	77 29 46	2692	75 52 55	2698
25	Spica	W.	95 21 45	2422	97 4 48	2429	98 47 41	2436	100 30 25	2443
	Antares	W.	49 33 3	2457	51 15 17	2460	52 57 26	2464	54 39 30	2467
	SUN	E.	67 50 48	2732	66 14 50	2738	64 39 1	2746	63 3 22	2753
26	Spica	W.	109 1 38	2478	110 43 22	2485	112 24 56	2494	114 6 18	2502
	Antares	W.	63 8 27	2490	64 49 54	2495	66 31 14	2501	68 12 26	2507
	Jupiter	W.	34 30 17	2468	36 12 15	2476	37 54 2	2482	39 35 41	2489
	SUN	E.	55 7 37	2792	53 32 59	2800	51 58 31	2809	50 24 15	2818
27	Antares	W.	76 36 19	2539	78 16 38	2545	79 56 48	2553	81 36 48	2560
	Jupiter	W.	48 1 28	2524	49 42 8	2531	51 22 38	2539	53 2 57	2546
	SUN	E.	42 35 50	2866	41 2 47	2876	39 29 57	2886	37 57 20	2898
28	Antares	W.	89 54 14	2599	91 33 11	2607	93 11 56	2616	94 50 29	2625
	Jupiter	W.	61 21 53	2586	63 1 7	2593	64 40 11	2602	66 19 3	2611
	SUN	E.	30 18 8	2964	28 47 10	2979	27 16 31	2997	25 46 14	3016

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to subtr. from Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Mon.	1	0 43 59.22	9.104	N. 4 43 50.3	57.76	1 4.50	3 50.11	0.751
Tues.	2	0 47 37.77	9.109	5 6 54.0	57.54	1 4.52	3 32.15	0.745
Wed.	3	0 51 16.45	9.115	5 29 52.2	57.30	1 4.54	3 14.33	0.740
Thur.	4	0 54 55.28	9.121	5 52 44.6	57.05	1 4.56	2 56.65	0.733
Frid.	5	0 58 34.27	9.128	6 15 30.8	56.79	1 4.59	2 39.13	0.726
Sat.	6	1 2 13.43	9.136	6 38 10.5	56.51	1 4.62	2 21.79	0.718
Sun.	7	1 5 52.79	9.145	7 0 43.4	56.22	1 4.65	2 4.65	0.710
Mon.	8	1 9 32.37	9.154	7 23 9.1	55.91	1 4.69	1 47.72	0.701
Tues.	9	1 13 12.17	9.164	7 45 27.1	55.59	1 4.73	1 31.01	0.691
Wed.	10	1 16 52.22	9.174	8 7 37.2	55.25	1 4.77	1 14.55	0.680
Thur.	11	1 20 32.53	9.185	8 29 39.1	54.90	1 4.81	0 58.35	0.669
Frid.	12	1 24 13.12	9.197	8 51 32.4	54.53	1 4.86	0 42.43	0.657
Sat.	13	1 27 54.00	9.210	9 13 16.7	54.15	1 4.91	0 26.81	0.644
Sun.	14	1 31 35.21	9.224	9 34 51.7	53.76	1 4.96	0 11.50	0.631
Mon.	15	1 35 16.75	9.239	9 56 17.2	53.36	1 5.01	0 3.47	0.616
Tues.	16	1 38 58.66	9.254	10 17 32.9	52.94	1 5.07	0 18.08	0.601
Wed.	17	1 42 40.94	9.270	10 38 38.4	52.51	1 5.12	0 32.30	0.584
Thur.	18	1 46 23.63	9.287	10 59 33.4	52.07	1 5.18	0 46.13	0.567
Frid.	19	1 50 6.74	9.305	11 20 17.7	51.61	1 5.24	0 59.54	0.550
Sat.	20	1 53 50.28	9.324	11 40 50.9	51.15	1 5.30	1 12.52	0.531
Sun.	21	1 57 34.27	9.343	12 1 12.7	50.66	1 5.37	1 25.04	0.512
Mon.	22	2 1 18.73	9.362	12 21 22.8	50.17	1 5.43	1 37.11	0.493
Tues.	23	2 5 3.65	9.382	12 41 20.9	49.66	1 5.49	1 48.71	0.473
Wed.	24	2 8 49.06	9.403	13 1 6.6	49.14	1 5.56	1 59.82	0.453
Thur.	25	2 12 34.97	9.423	13 20 39.6	48.60	1 5.63	2 10.44	0.432
Frid.	26	2 16 21.38	9.444	13 39 59.6	48.05	1 5.70	2 20.56	0.411
Sat.	27	2 20 8.30	9.466	13 59 6.1	47.49	1 5.78	2 30.17	0.390
Sun.	28	2 23 55.74	9.488	14 17 59.0	46.91	1 5.85	2 39.26	0.368
Mon.	29	2 27 43.70	9.510	14 36 37.8	46.32	1 5.92	2 47.83	0.346
Tues.	30	2 31 32.20	9.532	14 55 2.2	45.71	1 6.00	2 55.86	0.324
Wed.	31	2 35 21.23	9.554	N. 15 13 12.0	45.09	1 6.08	3 3.36	0.301

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subd. from added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		h m s	° ' "	' "	m s	h m s
Mon.	1	0 43 58.64	N. 4 43 46.6	16 1.8	3 50.16	0 40 8.49
Tues.	2	0 47 37.24	5 6 50.6	16 1.5	3 32.20	0 44 5.04
Wed.	3	0 51 15.96	5 29 49.1	16 1.2	3 14.37	0 48 1.59
Thur.	4	0 54 54.83	5 52 41.8	16 1.0	2 56.68	0 51 58.15
Frid.	5	0 58 33.86	6 15 28.3	16 0.7	2 39.16	0 55 54.70
Sat.	6	1 2 13.07	6 38 8.3	16 0.4	2 21.82	0 59 51.25
Sun.	7	1 5 52.48	7 0 41.4	16 0.1	2 4.67	1 3 47.80
Mon.	8	1 9 32.10	7 23 7.4	15 59.9	1 47.74	1 7 44.36
Tues.	9	1 13 11.94	7 45 25.7	15 59.6	1 31.03	1 11 40.91
Wed.	10	1 16 52.03	8 7 36.1	15 59.3	1 14.57	1 15 37.46
Thur.	11	1 20 32.38	8 29 38.2	15 59.1	0 58.37	1 19 34.02
Frid.	12	1 24 13.01	8 51 31.7	15 58.8	0 42.44	1 23 30.57
Sat.	13	1 27 53.93	9 13 16.3	15 58.5	0 26.81	1 27 27.12
Sun.	14	1 31 35.18	9 34 51.6	15 58.3	0 11.50	1 31 23.68
Mon.	15	1 35 16.76	9 56 17.3	15 58.0	0 3.47	1 35 20.23
Tues.	16	1 38 58.70	10 17 33.1	15 57.7	0 18.08	1 39 16.78
Wed.	17	1 42 41.03	10 38 38.8	15 57.5	0 32.31	1 43 13.34
Thur.	18	1 46 23.75	10 59 34.1	15 57.2	0 46.14	1 47 9.89
Frid.	19	1 50 6.89	11 20 18.6	15 56.9	0 59.55	1 51 6.44
Sat.	20	1 53 50.47	11 40 51.9	15 56.7	1 12.53	1 55 3.00
Sun.	21	1 57 34.49	12 1 13.9	15 56.4	1 25.06	1 58 59.55
Mon.	22	2 1 18.98	12 21 24.2	15 56.1	1 37.12	2 2 56.10
Tues.	23	2 5 3.94	12 41 22.4	15 55.9	1 48.72	2 6 52.66
Wed.	24	2 8 49.38	13 1 8.2	15 55.6	1 59.84	2 10 49.21
Thur.	25	2 12 35.31	13 20 41.4	15 55.4	2 10.46	2 14 45.77
Frid.	26	2 16 21.74	13 40 1.4	15 55.1	2 20.58	2 18 42.32
Sat.	27	2 20 8.69	13 59 8.1	15 54.9	2 30.19	2 22 38.88
Sun.	28	2 23 56.15	14 18 1.1	15 54.6	2 39.28	2 26 35.43
Mon.	29	2 27 44.14	14 36 39.9	15 54.4	2 47.84	2 30 31.99
Tues.	30	2 31 32.66	14 55 4.4	15 54.1	2 55.88	2 34 28.54
Wed.	31	2 35 21.72	N. 15 13 14.3	15 53.9	3 3.38	2 38 25.09

* The Semidiameter for *Apparent Noon* may be assumed the same as that for *Mean Noon*.

MEAN TIME.

Day of the Month.	THE SUN'S Apparent		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	11 57 25.2	S. 0.55	0.0000239	23 16 2.18	15 9.7	15 5.8	55 33.0	55 18.7
2	12 56 33.0	0.52	.0001484	23 12 6.27	15 2.1	14 58.7	55 5.1	54 52.6
3	13 55 38.8	0.48	.0002723	23 8 10.37	14 55.6	14 52.9	54 41.2	54 31.4
4	14 54 42.3	0.41	0.0003957	23 4 14.46	14 50.7	14 48.9	54 23.2	54 16.8
5	15 53 43.6	0.33	.0005185	23 0 18.55	14 47.8	14 47.2	54 12.5	54 10.4
6	16 52 42.7	0.23	.0006407	22 56 22.65	14 47.3	14 48.0	54 10.7	54 13.4
7	17 51 39.6	S. 0.12	0.0007625	22 52 26.74	14 49.4	14 51.5	54 18.6	54 26.3
8	18 50 34.2	0.00	.0008839	22 48 30.83	14 54.3	14 57.9	54 36.6	54 49.5
9	19 49 26.5	N. 0.12	.0010050	22 44 34.92	15 2.1	15 6.9	55 4.9	55 22.5
10	20 48 16.4	0.23	0.0011257	22 40 39.02	15 12.3	15 18.2	55 42.3	56 4.0
11	21 47 4.1	0.34	.0012462	22 36 43.11	15 24.6	15 31.3	56 27.3	56 51.9
12	22 45 49.5	0.43	.0013666	22 32 47.20	15 38.2	15 45.2	57 17.3	57 43.1
13	23 44 32.6	0.50	0.0014870	22 28 51.30	15 52.2	15 59.0	58 8.7	58 33.5
14	24 43 13.6	0.54	.0016074	22 24 55.39	16 5.4	16 11.4	58 57.1	59 18.9
15	25 41 52.5	0.56	.0017280	22 20 59.48	16 16.7	16 21.2	59 38.2	59 54.7
16	26 40 29.5	0.53	0.0018485	22 17 3.57	16 24.8	16 27.4	60 7.9	60 17.7
17	27 39 4.6	0.48	.0019691	22 13 7.67	16 29.1	16 29.7	60 23.7	60 26.0
18	28 37 38.0	0.40	.0020897	22 9 11.76	16 29.3	16 28.1	60 24.7	60 20.0
19	29 36 9.7	0.28	0.0022102	22 5 15.85	16 25.9	16 23.0	60 12.1	60 1.5
20	30 34 39.7	N. 0.15	.0023304	22 1 19.94	16 19.5	16 15.5	59 48.6	59 33.8
21	31 33 8.1	0.00	.0024502	21 57 24.03	16 11.0	16 6.3	59 17.5	59 0.1
22	32 31 34.9	S. 0.14	0.0025693	21 53 28.13	16 1.3	15 56.3	58 42.0	58 23.6
23	33 30 0.2	0.26	.0026877	21 49 32.22	15 51.2	15 46.2	58 5.1	57 46.7
24	34 28 23.8	0.37	.0028051	21 45 36.31	15 41.3	15 36.5	57 28.6	57 10.9
25	35 26 45.8	0.47	0.0029213	21 41 40.40	15 31.8	15 27.3	56 53.8	56 37.2
26	36 25 6.2	0.53	.0030363	21 37 44.49	15 22.9	15 18.7	56 21.3	56 6.0
27	37 23 25.0	0.57	.0031499	21 33 48.58	15 14.7	15 10.9	55 51.3	55 37.3
28	38 21 42.1	0.58	0.0032619	21 29 52.68	15 7.3	15 3.8	55 24.0	55 11.4
29	39 19 57.6	0.57	.0033724	21 25 56.77	15 0.6	14 57.6	54 59.5	54 48.5
30	40 18 11.4	0.53	.0034814	21 22 0.86	14 54.9	14 52.4	54 38.5	54 29.4
31	41 16 23.5	S. 0.46	0.0035888	21 18 4.95	14 50.2	14 48.4	54 21.4	54 14.7

MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S									
	Longitude.			Latitude.			Age.	Meridian Passage.		
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Upper.	Lower.	
	° ' "	° ' "		° ' "	° ' "		d	h m	h m	
1	23 52 5.5	30 8 0.5	S.	4 58 4.1	S.	4 52 25.2	1.0	0 57.3	13 19.3	
2	36 20 25.1	42 29 25.8		4 43 19.9		4 30 59.9	2.0	1 41.3	14 3.4	
3	48 35 12.9	54 38 1.5		4 15 38.4		3 57 29.5	3.0	2 25.7	14 48.2	
4	60 38 10.6	66 36 3.4		3 36 48.3		3 13 50.2	4.0	3 11.0	15 34.0	
5	72 32 6.8	78 26 51.5		2 48 50.8		2 22 5.7	5.0	3 57.4	16 21.1	
6	84 20 51.1	90 14 41.8		1 53 50.7		1 24 21.9	6.0	4 45.1	17 9.3	
7	96 9 2.1	102 4 32.2	S.	0 53 54.7	S.	0 22 45.8	7.0	5 33.8	17 58.5	
8	108 1 53.4	114 1 47.5	N.	0 8 48.2	N.	0 40 29.9	8.0	6 23.2	18 48.1	
9	120 4 56.1	126 11 59.7		1 12 0.7		1 43 1.5	9.0	7 12.9	19 37.7	
10	132 23 37.3	138 40 24.5		2 13 11.5		2 42 8.8	10.0	8 2.5	20 27.1	
11	145 2 53.1	151 31 29.3		3 9 29.8		3 34 49.8	11.0	8 51.7	21 16.2	
12	158 6 32.9	164 48 16.3		3 57 42.9		4 17 42.9	12.0	9 40.7	22 5.2	
13	171 36 41.7	178 31 42.5		4 34 23.2		4 47 19.0	13.0	10 29.8	22 54.6	
14	185 33 0.5	192 40 7.6		4 56 7.2		5 0 28.1	14.0	11 19.7	23 45.1	
15	199 52 25.1	207 9 4.9		5 0 6.7		4 54 54.1	15.0	12 11.0	* *	
16	214 29 11.8	221 51 45.6		4 44 47.9		4 29 53.1	16.0	13 4.4	0 37.4	
17	229 15 43.7	236 40 3.5		4 10 23.0		3 46 37.5	17.0	14 0.5	1 32.1	
18	244 3 45.6	251 25 55.7		3 19 3.5		2 48 13.1	18.0	14 59.2	2 29.5	
19	258 45 46.9	266 2 40.3		2 14 42.5		1 39 10.5	19.0	15 59.6	3 29.2	
20	273 16 5.9	280 25 42.1	N.	1 2 17.1	N.	0 24 42.0	20.0	17 0.3	4 30.0	
21	287 31 15.3	294 32 38.9	S.	0 12 56.4	S.	0 50 1.9	21.0	17 59.5	5 30.2	
22	301 29 52.3	308 22 59.4		1 26 1.0		2 0 23.2	22.0	18 55.9	6 28.1	
23	315 12 6.9	321 57 24.0		2 32 41.3		3 2 31.4	23.0	19 48.8	7 22.8	
24	328 39 0.5	335 17 6.7		3 29 33.1		3 53 29.2	24.0	20 38.4	8 14.0	
25	341 51 51.7	348 23 24.5		4 14 5.3		4 31 10.8	25.0	21 25.2	9 2.1	
26	354 51 51.8	1 17 19.9		4 44 37.8		4 54 21.0	26.0	22 10.1	9 47.9	
27	7 39 52.9	13 59 34.3		5 0 18.4		5 2 30.7	27.0	22 53.9	10 32.1	
28	20 16 26.9	26 30 33.2		5 1 1.3		4 55 55.4	28.0	23 37.4	11 15.6	
29	32 41 56.4	38 50 39.9		4 47 21.5		4 35 29.5	29.0	* *	11 59.2	
30	44 56 48.9	51 0 30.5		4 20 31.1		4 2 39.9	0.4	0 21.3	12 43.5	
31	57 1 53.4	63 1 9.5	S.	3 42 10.3	S.	3 19 18.0	1.4	1 6.1	13 28.9	

The Moon's Longitude and Latitude are from HANSEN's Tables *direct*; the Right Ascension and Declination contain NEWCOMB's corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 1.					WEDNESDAY 3.				
0	1 35 42.04	19.446	N. 4 38 39.0	117.50	0	3 9 18.74	19.701	N. 13 15 58.8	95.35
1	1 37 38.70	19.444	4 50 23.1	117.21	1	3 11 16.99	19.715	13 25 29.1	94.73
2	1 39 35.34	19.438	5 2 5.5	116.92	2	3 13 15.32	19.729	13 34 55.6	94.10
3	1 41 31.96	19.435	5 13 46.1	116.61	3	3 15 13.74	19.743	13 44 18.3	93.46
4	1 43 28.56	19.433	5 25 24.8	116.29	4	3 17 12.24	19.758	13 53 37.1	92.82
5	1 45 25.15	19.430	5 37 1.6	115.98	5	3 19 10.83	19.773	14 2 52.1	92.17
6	1 47 21.72	19.428	5 48 36.5	115.65	6	3 21 9.51	19.787	14 12 3.1	91.51
7	1 49 18.29	19.428	6 0 9.4	115.31	7	3 23 8.27	19.802	14 21 10.2	90.84
8	1 51 14.85	19.426	6 11 40.2	114.97	8	3 25 7.13	19.818	14 30 13.2	90.18
9	1 53 11.40	19.425	6 23 9.0	114.62	9	3 27 6.08	19.833	14 39 12.3	89.51
10	1 55 7.95	19.426	6 34 35.6	114.26	10	3 29 5.12	19.848	14 48 7.3	88.83
11	1 57 4.51	19.427	6 46 0.1	113.89	11	3 31 4.26	19.865	14 56 58.2	88.13
12	1 59 1.07	19.427	6 57 22.3	113.51	12	3 33 3.50	19.881	15 5 44.9	87.44
13	2 0 57.63	19.428	7 8 42.2	113.13	13	3 35 2.83	19.897	15 14 27.5	86.74
14	2 2 54.20	19.429	7 19 59.9	112.75	14	3 37 2.26	19.914	15 23 5.8	86.03
15	2 4 50.78	19.432	7 31 15.2	112.34	15	3 39 1.80	19.931	15 31 39.9	85.33
16	2 6 47.38	19.434	7 42 28.0	111.94	16	3 41 1.43	19.948	15 40 9.8	84.62
17	2 8 43.99	19.436	7 53 38.5	111.53	17	3 43 1.17	19.965	15 48 35.4	83.90
18	2 10 40.61	19.439	8 4 46.4	111.11	18	3 45 1.01	19.982	15 56 56.6	83.17
19	2 12 37.26	19.443	8 15 51.8	110.68	19	3 47 0.95	19.999	16 5 13.4	82.43
20	2 14 33.93	19.448	8 26 54.6	110.25	20	3 49 1.00	20.018	16 13 25.8	81.70
21	2 16 30.63	19.452	8 37 54.8	109.82	21	3 51 1.16	20.035	16 21 33.8	80.96
22	2 18 27.35	19.456	8 48 52.4	109.37	22	3 53 1.42	20.053	16 29 37.3	80.20
23	2 20 24.10	19.461	N. 8 59 47.2	108.91	23	3 55 1.79	20.071	N. 16 37 36.2	79.45
TUESDAY 2.					THURSDAY 4.				
0	2 22 20.88	19.467	N. 9 10 39.3	108.45	0	3 57 2.27	20.089	N. 16 45 30.7	78.70
1	2 24 17.70	19.473	9 21 28.6	107.98	1	3 59 2.86	20.108	16 53 20.6	77.93
2	2 26 14.55	19.479	9 32 15.1	107.51	2	4 1 3.57	20.128	17 1 5.8	77.15
3	2 28 11.45	19.486	9 42 58.7	107.03	3	4 3 4.39	20.146	17 8 46.4	76.38
4	2 30 8.38	19.493	9 53 39.4	106.54	4	4 5 5.32	20.164	17 16 22.4	75.60
5	2 32 5.36	19.500	10 4 17.2	106.04	5	4 7 6.36	20.183	17 23 53.6	74.81
6	2 34 2.38	19.508	10 14 51.9	105.53	6	4 9 7.51	20.202	17 31 20.1	74.03
7	2 35 59.45	19.516	10 25 23.6	105.03	7	4 11 8.78	20.222	17 38 41.9	73.23
8	2 37 56.57	19.524	10 35 52.2	104.51	8	4 13 10.17	20.241	17 45 58.8	72.42
9	2 39 53.74	19.533	10 46 17.7	103.98	9	4 15 11.67	20.260	17 53 10.9	71.62
10	2 41 50.96	19.542	10 56 40.0	103.46	10	4 17 13.29	20.279	18 0 18.2	70.81
11	2 43 48.24	19.551	11 6 59.2	102.92	11	4 19 15.02	20.298	18 7 20.6	69.98
12	2 45 45.57	19.560	11 17 15.0	102.37	12	4 21 16.87	20.318	18 14 18.0	69.16
13	2 47 42.96	19.571	11 27 27.6	101.83	13	4 23 18.84	20.338	18 21 10.5	68.33
14	2 49 40.42	19.582	11 37 36.9	101.27	14	4 25 20.92	20.358	18 27 58.0	67.50
15	2 51 37.94	19.592	11 47 42.8	100.71	15	4 27 23.13	20.378	18 34 40.5	66.67
16	2 53 35.52	19.603	11 57 45.4	100.14	16	4 29 25.45	20.397	18 41 18.0	65.83
17	2 55 33.17	19.614	12 7 44.5	99.56	17	4 31 27.89	20.417	18 47 50.4	64.98
18	2 57 30.89	19.626	12 17 40.1	98.98	18	4 33 30.45	20.436	18 54 17.7	64.12
19	2 59 28.68	19.638	12 27 32.2	98.39	19	4 35 33.12	20.456	19 0 39.8	63.26
20	3 1 26.54	19.650	12 37 20.8	97.80	20	4 37 35.92	20.477	19 6 56.8	62.40
21	3 3 24.48	19.663	12 47 5.8	97.20	21	4 39 38.84	20.497	19 13 8.6	61.53
22	3 5 22.49	19.675	12 56 47.2	96.59	22	4 41 41.88	20.516	19 19 15.2	60.67
23	3 7 20.58	19.688	13 6 24.9	95.97	23	4 43 45.03	20.535	19 25 16.6	59.79
24	3 9 18.74	19.701	N. 13 15 58.8	95.35	24	4 45 48.30	20.555	N. 19 31 12.7	58.91

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 5.					SUNDAY 7.				
0	4 45 48.30	20.555	N.19 31 12.7	58.91	0	6 26 35.98	21.382	N.22 24 44.3	12.05
1	4 47 51.69	20.575	19 37 3.5	58.03	1	6 28 44.31	21.394	22 25 53.5	11.00
2	4 49 55.20	20.595	19 42 49.0	57.13	2	6 30 52.71	21.407	22 26 56.3	9.94
3	4 51 58.83	20.615	19 48 29.1	56.24	3	6 33 1.19	21.419	22 27 52.8	8.89
4	4 54 2.58	20.635	19 54 3.9	55.34	4	6 35 9.74	21.430	22 28 43.0	7.83
5	4 56 6.45	20.655	19 59 33.2	54.43	5	6 37 18.35	21.441	22 29 26.8	6.78
6	4 58 10.44	20.674	20 4 57.1	53.53	6	6 39 27.03	21.453	22 30 4.3	5.72
7	5 0 14.54	20.694	20 10 15.5	52.62	7	6 41 35.78	21.463	22 30 35.4	4.65
8	5 2 18.77	20.714	20 15 28.5	51.71	8	6 43 44.59	21.473	22 31 0.1	3.58
9	5 4 23.11	20.733	20 20 36.0	50.78	9	6 45 53.46	21.483	22 31 18.4	2.52
10	5 6 27.57	20.753	20 25 37.9	49.85	10	6 48 2.39	21.493	22 31 30.3	1.45
11	5 8 32.15	20.773	20 30 34.2	48.93	11	6 50 11.38	21.503	22 31 35.8	0.38
12	5 10 36.84	20.792	20 35 25.0	48.00	12	6 52 20.43	21.513	22 31 34.8	0.70
13	5 12 41.65	20.811	20 40 10.2	47.06	13	6 54 29.53	21.522	22 31 27.4	1.77
14	5 14 46.57	20.829	20 44 49.7	46.11	14	6 56 38.69	21.531	22 31 13.6	2.83
15	5 16 51.60	20.848	20 49 23.5	45.17	15	6 58 47.90	21.538	22 30 53.4	3.91
16	5 18 56.75	20.868	20 53 51.7	44.23	16	7 0 57.15	21.547	22 30 26.7	4.99
17	5 21 2.01	20.887	20 58 14.2	43.27	17	7 3 6.46	21.555	22 29 53.5	6.07
18	5 23 7.39	20.905	21 2 30.9	42.31	18	7 5 15.81	21.563	22 29 13.9	7.14
19	5 25 12.87	20.923	21 6 41.9	41.35	19	7 7 25.21	21.570	22 28 27.8	8.23
20	5 27 18.47	20.942	21 10 47.1	40.38	20	7 9 34.65	21.577	22 27 35.2	9.31
21	5 29 24.18	20.960	21 14 46.5	39.42	21	7 11 44.13	21.583	22 26 36.1	10.39
22	5 31 29.99	20.978	21 18 40.1	38.44	22	7 13 53.65	21.589	22 25 30.5	11.47
23	5 33 35.92	20.997	N.21 22 27.8	37.46	23	7 16 3.20	21.596	N.22 24 18.5	12.55
SATURDAY 6.					MONDAY 8.				
0	5 35 41.95	21.014	N.21 26 9.6	36.48	0	7 18 12.80	21.602	N.22 22 59.9	13.63
1	5 37 48.09	21.032	21 29 45.6	35.51	1	7 20 22.43	21.607	22 21 34.9	14.72
2	5 39 54.33	21.049	21 33 15.7	34.52	2	7 22 32.08	21.612	22 20 3.3	15.80
3	5 42 0.68	21.067	21 36 39.8	33.53	3	7 24 41.77	21.618	22 18 25.3	16.88
4	5 44 7.13	21.084	21 39 58.0	32.53	4	7 26 51.49	21.623	22 16 40.8	17.97
5	5 46 13.69	21.101	21 43 10.2	31.54	5	7 29 1.24	21.627	22 14 49.7	19.05
6	5 48 20.34	21.118	21 46 16.5	30.54	6	7 31 11.01	21.630	22 12 52.2	20.13
7	5 50 27.10	21.134	21 49 16.7	29.53	7	7 33 20.80	21.633	22 10 48.1	21.23
8	5 52 33.95	21.150	21 52 10.9	28.53	8	7 35 30.61	21.638	22 8 37.5	22.31
9	5 54 40.90	21.167	21 54 59.1	27.53	9	7 37 40.45	21.641	22 6 20.4	23.39
10	5 56 47.95	21.183	21 57 41.2	26.51	10	7 39 50.30	21.643	22 3 56.8	24.48
11	5 58 55.09	21.198	22 0 17.2	25.49	11	7 42 0.17	21.647	22 1 26.6	25.57
12	6 1 2.32	21.213	22 2 47.1	24.48	12	7 44 10.06	21.649	21 58 50.0	26.65
13	6 3 9.65	21.229	22 5 10.9	23.46	13	7 46 19.96	21.651	21 56 6.8	27.73
14	6 5 17.07	21.244	22 7 28.6	22.43	14	7 48 29.87	21.653	21 53 17.2	28.82
15	6 7 24.58	21.259	22 9 40.1	21.40	15	7 50 39.79	21.654	21 50 21.0	29.91
16	6 9 32.18	21.274	22 11 45.4	20.38	16	7 52 49.72	21.655	21 47 18.3	30.98
17	6 11 39.87	21.288	22 13 44.6	19.34	17	7 54 59.65	21.656	21 44 9.2	32.07
18	6 13 47.64	21.303	22 15 37.5	18.31	18	7 57 9.59	21.658	21 40 53.5	33.15
19	6 15 55.50	21.316	22 17 24.3	17.28	19	7 59 19.54	21.658	21 37 31.4	34.23
20	6 18 3.43	21.329	22 19 4.8	16.23	20	8 1 29.49	21.658	21 34 2.7	35.32
21	6 20 11.45	21.343	22 20 39.1	15.19	21	8 3 39.44	21.658	21 30 27.6	36.39
22	6 22 19.55	21.357	22 22 7.1	14.15	22	8 5 49.39	21.658	21 26 46.0	37.47
23	6 24 27.73	21.369	22 23 28.9	13.10	23	8 7 59.34	21.658	21 22 58.0	38.53
24	6 26 35.98	21.382	N.22 24 44.3	12.05	24	8 10 9.28	21.657	N.21 19 3.6	39.61

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 9.					THURSDAY 11.				
0	8 10 9.28	21.657	N.21 19 3.6	39.61	0	9 53 42.72	21.457	N.16 9 15.7	88.22
1	8 12 19.22	21.656	21 15 2.7	40.69	1	9 55 51.45	21.453	16 0 23.7	89.13
2	8 14 29.15	21.654	21 10 55.3	41.77	2	9 58 0.15	21.448	15 51 26.1	90.05
3	8 16 39.07	21.653	21 6 41.5	42.83	3	10 0 8.82	21.443	15 42 23.1	90.95
4	8 18 48.99	21.652	21 2 21.3	43.90	4	10 2 17.46	21.438	15 33 14.7	91.85
5	8 20 58.89	21.650	20 57 54.7	44.97	5	10 4 26.08	21.433	15 24 0.9	92.74
6	8 23 8.79	21.648	20 53 21.7	46.04	6	10 6 34.66	21.428	15 14 41.8	93.63
7	8 25 18.67	21.646	20 48 42.2	47.11	7	10 8 43.22	21.425	15 5 17.4	94.51
8	8 27 28.54	21.643	20 43 56.4	48.17	8	10 10 51.76	21.421	14 55 47.7	95.38
9	8 29 38.39	21.641	20 39 4.2	49.23	9	10 13 0.27	21.417	14 46 12.8	96.26
10	8 31 48.23	21.638	20 34 5.7	50.28	10	10 15 8.76	21.412	14 36 32.6	97.13
11	8 33 58.05	21.635	20 29 0.8	51.34	11	10 17 17.22	21.408	14 26 47.3	97.98
12	8 36 7.85	21.632	20 23 49.6	52.39	12	10 19 25.65	21.404	14 16 56.8	98.84
13	8 38 17.63	21.629	20 18 32.1	53.45	13	10 21 34.07	21.402	14 7 1.2	99.68
14	8 40 27.40	21.626	20 13 8.2	54.50	14	10 23 42.47	21.398	13 57 0.6	100.52
15	8 42 37.14	21.622	20 7 38.1	55.54	15	10 25 50.85	21.395	13 46 55.0	101.35
16	8 44 46.86	21.618	20 2 1.7	56.59	16	10 27 59.21	21.393	13 36 44.4	102.18
17	8 46 56.56	21.614	19 56 19.0	57.63	17	10 30 7.56	21.390	13 26 28.9	102.99
18	8 49 6.23	21.610	19 50 30.1	58.67	18	10 32 15.89	21.388	13 16 8.5	103.81
19	8 51 15.88	21.606	19 44 35.0	59.71	19	10 34 24.21	21.385	13 5 43.2	104.62
20	8 53 25.50	21.602	19 38 33.6	60.75	20	10 36 32.51	21.383	12 55 13.1	105.41
21	8 55 35.10	21.598	19 32 26.0	61.78	21	10 38 40.80	21.382	12 44 38.3	106.19
22	8 57 44.67	21.593	19 26 12.2	62.81	22	10 40 49.09	21.380	12 33 58.8	106.98
23	8 59 54.22	21.588	N.19 19 52.3	63.83	23	10 42 57.36	21.378	N.12 23 14.5	107.76
WEDNESDAY 10.					FRIDAY 12.				
0	9 2 3.73	21.583	N.19 13 26.3	64.85	0	10 45 5.62	21.377	N.12 12 25.7	108.52
1	9 4 13.22	21.578	19 6 54.1	65.87	1	10 47 13.88	21.376	12 1 32.3	109.28
2	9 6 22.67	21.573	19 0 15.8	66.88	2	10 49 22.13	21.376	11 50 34.3	110.04
3	9 8 32.10	21.568	18 53 31.5	67.89	3	10 51 30.39	21.376	11 39 31.8	110.78
4	9 10 41.49	21.563	18 46 41.1	68.91	4	10 53 38.64	21.375	11 28 24.9	111.53
5	9 12 50.86	21.558	18 39 44.6	69.92	5	10 55 46.89	21.375	11 17 13.5	112.26
6	9 15 0.19	21.553	18 32 42.1	70.92	6	10 57 55.14	21.376	11 5 57.8	112.98
7	9 17 9.49	21.548	18 25 33.6	71.91	7	11 0 3.40	21.377	10 54 37.8	113.68
8	9 19 18.77	21.543	18 18 19.2	72.90	8	11 2 11.66	21.378	10 43 13.6	114.39
9	9 21 28.01	21.537	18 10 58.8	73.89	9	11 4 19.93	21.379	10 31 45.1	115.09
10	9 23 37.21	21.532	18 3 32.5	74.88	10	11 6 28.21	21.381	10 20 12.5	115.78
11	9 25 46.39	21.527	17 56 0.2	75.87	11	11 8 36.50	21.383	10 8 35.8	116.46
12	9 27 55.53	21.521	17 48 22.1	76.84	12	11 10 44.80	21.385	9 56 55.0	117.13
13	9 30 4.64	21.516	17 40 38.1	77.82	13	11 12 53.12	21.388	9 45 10.2	117.79
14	9 32 13.72	21.510	17 32 48.3	78.78	14	11 15 1.45	21.390	9 33 21.5	118.44
15	9 34 22.76	21.504	17 24 52.7	79.75	15	11 17 9.80	21.394	9 21 28.9	119.09
16	9 36 31.77	21.499	17 16 51.3	80.71	16	11 19 18.18	21.398	9 9 32.4	119.73
17	9 38 40.75	21.494	17 8 44.2	81.67	17	11 21 26.57	21.401	8 57 32.2	120.35
18	9 40 49.70	21.489	17 0 31.3	82.63	18	11 23 34.99	21.406	8 45 28.2	120.97
19	9 42 58.62	21.483	16 52 12.7	83.57	19	11 25 43.44	21.411	8 33 20.5	121.58
20	9 45 7.50	21.478	16 43 48.5	84.50	20	11 27 51.92	21.416	8 21 9.2	122.18
21	9 47 16.35	21.473	16 35 18.7	85.43	21	11 30 0.43	21.421	8 8 54.4	122.76
22	9 49 25.18	21.468	16 26 43.3	86.37	22	11 32 8.97	21.427	7 56 36.1	123.34
23	9 51 33.97	21.462	16 18 2.3	87.30	23	11 34 17.55	21.433	7 44 14.3	123.91
24	9 53 42.72	21.457	N.16 9 15.7	88.22	24	11 36 26.17	21.440	N.7 31 49.2	124.47

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 13.					MONDAY 15.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	11 36 26	17	21 440	N. 7 31 49	2	13 20 55	62	22 276	S. 3 8 21
1	11 38 34	83	21 447	7 19 20	7	13 23 9	36	22 304	3 22 5
2	11 40 43	53	21 454	7 6 49	0	13 25 23	27	22 333	3 35 49
3	11 42 52	28	21 462	6 54 14	1	13 27 37	36	22 363	3 49 32
4	11 45 1	07	21 470	6 41 36	0	13 29 51	63	22 393	4 3 15
5	11 47 9	92	21 479	6 28 54	9	13 32 6	08	22 424	4 16 57
6	11 49 18	82	21 488	6 16 10	8	13 34 20	72	22 456	4 30 38
7	11 51 27	77	21 498	6 3 23	7	13 36 35	55	22 487	4 44 18
8	11 53 36	79	21 508	5 50 33	6	13 38 50	56	22 518	4 57 57
9	11 55 45	86	21 518	5 37 41	5	13 41 5	77	22 552	5 11 35
10	11 57 55	00	21 528	5 24 45	4	13 43 21	18	22 584	5 25 12
11	12 0 4	20	21 538	5 11 47	3	13 45 36	78	22 618	5 38 48
12	12 2 13	46	21 550	4 58 46	2	13 47 52	59	22 652	5 52 22
13	12 4 22	80	21 563	4 45 43	1	13 50 8	60	22 685	6 5 55
14	12 6 32	21	21 575	4 32 37	0	13 52 24	81	22 720	6 19 26
15	12 8 41	70	21 588	4 19 29	9	13 54 41	24	22 755	6 32 56
16	12 10 51	27	21 601	4 6 18	8	13 56 57	87	22 790	6 46 24
17	12 13 0	91	21 614	3 53 5	7	13 59 14	72	22 826	6 59 50
18	12 15 10	64	21 629	3 39 50	6	14 1 31	78	22 862	7 13 14
19	12 17 20	46	21 644	3 26 33	5	14 3 49	06	22 898	7 26 36
20	12 19 30	37	21 659	3 13 14	4	14 6 6	56	22 935	7 39 56
21	12 21 40	37	21 675	2 59 52	3	14 8 24	28	22 973	7 53 13
22	12 23 50	47	21 691	2 46 29	2	14 10 42	23	23 010	8 6 28
23	12 26 0	66	21 707	2 33 4	1	14 13 0	40	23 047	8 19 41
SUNDAY 14.					TUESDAY 16.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	12 28 10	95	21 724	N. 2 19 38	0	14 15 18	79	23 085	S. 8 32 51
1	12 30 21	35	21 742	2 6 9	1	14 17 37	42	23 124	8 45 59
2	12 32 31	85	21 759	1 52 39	2	14 19 56	28	23 163	8 59 4
3	12 34 42	46	21 778	1 39 8	3	14 22 15	37	23 201	9 12 6
4	12 36 53	19	21 798	1 25 35	4	14 24 34	69	23 241	9 25 5
5	12 39 4	03	21 817	1 12 1	5	14 26 54	26	23 281	9 38 1
6	12 41 14	99	21 837	0 58 25	6	14 29 14	06	23 320	9 50 54
7	12 43 26	07	21 857	0 44 48	7	14 31 34	10	23 361	10 3 44
8	12 45 37	27	21 878	0 31 10	8	14 33 54	39	23 402	10 16 30
9	12 47 48	60	21 898	0 17 31	9	14 36 14	92	23 442	10 29 13
10	12 50 0	05	21 920	N. 0 3 51	10	14 38 35	69	23 482	10 41 52
11	12 52 11	64	21 943	S. 0 9 49	11	14 40 56	70	23 523	10 54 28
12	12 54 23	36	21 965	0 23 30	12	14 43 17	97	23 565	11 7 0
13	12 56 35	22	21 988	0 37 13	13	14 45 39	48	23 607	11 19 28
14	12 58 47	22	22 013	0 50 56	14	14 48 1	25	23 648	11 31 52
15	13 0 59	37	22 037	1 4 39	15	14 50 23	26	23 689	11 44 12
16	13 3 11	66	22 061	1 18 23	16	14 52 45	52	23 732	11 56 28
17	13 5 24	10	22 087	1 32 7	17	14 55 8	04	23 774	12 8 39
18	13 7 36	70	22 113	1 45 52	18	14 57 30	81	23 816	12 20 46
19	13 9 49	45	22 138	1 59 37	19	14 59 53	83	23 858	12 32 49
20	13 12 2	35	22 164	2 13 22	20	15 2 17	10	23 900	12 44 47
21	13 14 15	42	22 192	2 27 7	21	15 4 40	63	23 943	12 56 41
22	13 16 28	65	22 219	2 40 52	22	15 7 4	42	23 986	13 8 30
23	13 18 42	05	22 248	2 54 36	23	15 9 28	46	24 028	13 20 14
24	13 20 55	62	22 276	S. 3 8 21	24	15 11 52	75	24 070	S. 13 31 53

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 17.					FRIDAY 19.				
0	15 11 52 ^h 75 ^m 24 ^s 070		S. 13 31 53 ^h 2 ^m 116 ^s 08		0	17 11 54 ^h 49 ^m 25 ^s 766		S. 20 44 21 ^h 3 ^m 59 ^s 04	
1	15 14 17 ^h 30 ^m 24 ^s 113		13 43 27 ^h 2 ^m 115 ^s 23		1	17 14 29 ^h 15 ^m 25 ^s 787		20 50 11 ^h 2 ^m 57 ^s 58	
2	15 16 42 ^h 10 ^m 24 ^s 155		13 54 56 ^h 0 ^m 114 ^s 36		2	17 17 3 ^h 93 ^m 25 ^s 806		20 55 52 ^h 3 ^m 56 ^s 11	
3	15 19 7 ^h 16 ^m 24 ^s 198		14 6 19 ^h 5 ^m 113 ^s 48		3	17 19 38 ^h 82 ^m 25 ^s 824		21 1 24 ^h 5 ^m 54 ^s 62	
4	15 21 32 ^h 47 ^m 24 ^s 240		14 17 37 ^h 7 ^m 112 ^s 58		4	17 22 13 ^h 82 ^m 25 ^s 842		21 6 47 ^h 7 ^m 53 ^s 13	
5	15 23 58 ^h 04 ^m 24 ^s 283		14 28 50 ^h 5 ^m 111 ^s 68		5	17 24 48 ^h 92 ^m 25 ^s 858		21 12 2 ^h 0 ^m 51 ^s 63	
6	15 26 23 ^h 87 ^m 24 ^s 325		14 39 57 ^h 8 ^m 110 ^s 74		6	17 27 24 ^h 12 ^m 25 ^s 873		21 17 7 ^h 3 ^m 50 ^s 13	
7	15 28 49 ^h 94 ^m 24 ^s 367		14 50 59 ^h 4 ^m 109 ^s 79		7	17 29 59 ^h 40 ^m 25 ^s 888		21 22 3 ^h 5 ^m 48 ^s 62	
8	15 31 16 ^h 27 ^m 24 ^s 409		15 1 55 ^h 3 ^m 108 ^s 83		8	17 32 34 ^h 77 ^m 25 ^s 902		21 26 50 ^h 7 ^m 47 ^s 10	
9	15 33 42 ^h 85 ^m 24 ^s 451		15 12 45 ^h 4 ^m 107 ^s 85		9	17 35 10 ^h 22 ^m 25 ^s 914		21 31 28 ^h 7 ^m 45 ^s 58	
10	15 36 9 ^h 68 ^m 24 ^s 493		15 23 29 ^h 5 ^m 106 ^s 86		10	17 37 45 ^h 74 ^m 25 ^s 925		21 35 57 ^h 6 ^m 44 ^s 05	
11	15 38 36 ^h 76 ^m 24 ^s 534		15 34 7 ^h 7 ^m 105 ^s 85		11	17 40 21 ^h 32 ^m 25 ^s 935		21 40 17 ^h 3 ^m 42 ^s 52	
12	15 41 4 ^h 09 ^m 24 ^s 576		15 44 39 ^h 7 ^m 104 ^s 82		12	17 42 56 ^h 06 ^m 25 ^s 944		21 44 27 ^h 8 ^m 40 ^s 98	
13	15 43 31 ^h 67 ^m 24 ^s 617		15 55 5 ^h 5 ^m 103 ^s 78		13	17 45 32 ^h 65 ^m 25 ^s 953		21 48 29 ^h 1 ^m 39 ^s 44	
14	15 45 59 ^h 49 ^m 24 ^s 658		16 5 25 ^h 1 ^m 102 ^s 73		14	17 48 8 ^h 39 ^m 25 ^s 960		21 52 21 ^h 1 ^m 37 ^s 89	
15	15 48 27 ^h 56 ^m 24 ^s 698		16 15 38 ^h 3 ^m 101 ^s 66		15	17 50 44 ^h 17 ^m 25 ^s 966		21 56 3 ^h 8 ^m 36 ^s 35	
16	15 50 55 ^h 87 ^m 24 ^s 738		16 25 45 ^h 0 ^m 100 ^s 58		16	17 53 19 ^h 98 ^m 25 ^s 971		21 59 37 ^h 3 ^m 34 ^s 80	
17	15 53 24 ^h 42 ^m 24 ^s 778		16 35 45 ^h 2 ^m 99 ^s 48		17	17 55 55 ^h 82 ^m 25 ^s 975		22 3 1 ^h 4 ^m 33 ^s 24	
18	15 55 53 ^h 21 ^m 24 ^s 818		16 45 38 ^h 7 ^m 98 ^s 35		18	17 58 31 ^h 68 ^m 25 ^s 978		22 6 16 ^h 2 ^m 31 ^s 68	
19	15 58 22 ^h 24 ^m 24 ^s 858		16 55 25 ^h 4 ^m 97 ^s 23		19	18 1 7 ^h 55 ^m 25 ^s 979		22 9 21 ^h 6 ^m 30 ^s 13	
20	16 0 51 ^h 50 ^m 24 ^s 897		17 5 5 ^h 4 ^m 96 ^s 09		20	18 3 43 ^h 43 ^m 25 ^s 979		22 12 17 ^h 7 ^m 28 ^s 57	
21	16 3 21 ^h 00 ^m 24 ^s 936		17 14 38 ^h 5 ^m 94 ^s 93		21	18 6 19 ^h 30 ^m 25 ^s 978		22 15 4 ^h 4 ^m 27 ^s 00	
22	16 5 50 ^h 73 ^m 24 ^s 974		17 24 4 ^h 6 ^m 93 ^s 76		22	18 8 55 ^h 17 ^m 25 ^s 978		22 17 41 ^h 7 ^m 25 ^s 44	
23	16 8 20 ^h 69 ^m 25 ^s 013		S. 17 33 23 ^h 6 ^m 92 ^s 57		23	18 11 31 ^h 03 ^m 25 ^s 975		S. 22 20 9 ^h 7 ^m 23 ^s 88	
THURSDAY 18.					SATURDAY 20.				
0	16 10 50 ^h 88 ^m 25 ^s 050		S. 17 42 35 ^h 4 ^m 91 ^s 37		0	18 14 6 ^h 87 ^m 25 ^s 971		S. 22 22 28 ^h 2 ^m 22 ^s 30	
1	16 13 21 ^h 29 ^m 25 ^s 087		17 51 40 ^h 0 ^m 90 ^s 16		1	18 16 42 ^h 68 ^m 25 ^s 966		22 24 37 ^h 3 ^m 20 ^s 73	
2	16 15 51 ^h 92 ^m 25 ^s 123		18 0 37 ^h 3 ^m 88 ^s 93		2	18 19 18 ^h 46 ^m 25 ^s 960		22 26 37 ^h 0 ^m 19 ^s 17	
3	16 18 22 ^h 77 ^m 25 ^s 159		18 9 27 ^h 7 ^m 87 ^s 70		3	18 21 54 ^h 20 ^m 25 ^s 952		22 28 27 ^h 3 ^m 17 ^s 60	
4	16 20 53 ^h 83 ^m 25 ^s 195		18 18 9 ^h 7 ^m 86 ^s 45		4	18 24 29 ^h 88 ^m 25 ^s 943		22 30 8 ^h 2 ^m 16 ^s 03	
5	16 23 25 ^h 11 ^m 25 ^s 230		18 26 44 ^h 6 ^m 85 ^s 18		5	18 27 5 ^h 52 ^m 25 ^s 934		22 31 39 ^h 7 ^m 14 ^s 47	
6	16 25 56 ^h 59 ^m 25 ^s 264		18 35 11 ^h 8 ^m 83 ^s 90		6	18 29 41 ^h 09 ^m 25 ^s 923		22 33 1 ^h 8 ^m 12 ^s 90	
7	16 28 28 ^h 28 ^m 25 ^s 298		18 43 31 ^h 4 ^m 82 ^s 62		7	18 32 16 ^h 60 ^m 25 ^s 912		22 34 14 ^h 5 ^m 11 ^s 33	
8	16 31 0 ^h 17 ^m 25 ^s 332		18 51 43 ^h 2 ^m 81 ^s 32		8	18 34 52 ^h 03 ^m 25 ^s 898		22 35 17 ^h 8 ^m 9 ^s 77	
9	16 33 32 ^h 26 ^m 25 ^s 365		18 59 47 ^h 2 ^m 80 ^s 01		9	18 37 27 ^h 38 ^m 25 ^s 884		22 36 11 ^h 7 ^m 8 ^s 21	
10	16 36 4 ^h 55 ^m 25 ^s 397		19 7 43 ^h 3 ^m 78 ^s 68		10	18 40 2 ^h 64 ^m 25 ^s 869		22 36 56 ^h 3 ^m 6 ^s 65	
11	16 38 37 ^h 02 ^m 25 ^s 428		19 15 31 ^h 4 ^m 77 ^s 34		11	18 42 37 ^h 81 ^m 25 ^s 853		22 37 31 ^h 5 ^m 5 ^s 09	
12	16 41 9 ^h 68 ^m 25 ^s 458		19 23 11 ^h 4 ^m 75 ^s 99		12	18 45 12 ^h 88 ^m 25 ^s 836		22 37 57 ^h 4 ^m 3 ^s 53	
13	16 43 42 ^h 52 ^m 25 ^s 488		19 30 43 ^h 3 ^m 74 ^s 63		13	18 47 47 ^h 84 ^m 25 ^s 818		22 38 13 ^h 9 ^m 1 ^s 98	
14	16 46 15 ^h 54 ^m 25 ^s 518		19 38 7 ^h 0 ^m 73 ^s 27		14	18 50 22 ^h 69 ^m 25 ^s 798		22 38 21 ^h 1 ^m 0 ^s 43	
15	16 48 48 ^h 74 ^m 25 ^s 547		19 45 22 ^h 5 ^m 71 ^s 89		15	18 52 57 ^h 42 ^m 25 ^s 778		22 38 19 ^h 1 ^m 1 ^s 11	
16	16 51 22 ^h 10 ^m 25 ^s 574		19 52 29 ^h 7 ^m 70 ^s 50		16	18 55 32 ^h 02 ^m 25 ^s 756		22 38 7 ^h 8 ^m 2 ^s 65	
17	16 53 55 ^h 63 ^m 25 ^s 601		19 59 28 ^h 5 ^m 69 ^s 10		17	18 58 6 ^h 49 ^m 25 ^s 733		22 37 47 ^h 3 ^m 4 ^s 18	
18	16 56 29 ^h 31 ^m 25 ^s 627		20 6 18 ^h 9 ^m 67 ^s 69		18	19 0 40 ^h 82 ^m 25 ^s 709		22 37 17 ^h 6 ^m 5 ^s 72	
19	16 59 3 ^h 15 ^m 25 ^s 653		20 13 0 ^h 8 ^m 66 ^s 28		19	19 3 15 ^h 00 ^m 25 ^s 684		22 36 38 ^h 7 ^m 7 ^s 24	
20	17 1 37 ^h 14 ^m 25 ^s 678		20 19 34 ^h 2 ^m 64 ^s 85		20	19 5 49 ^h 03 ^m 25 ^s 658		22 35 50 ^h 7 ^m 8 ^s 77	
21	17 4 11 ^h 28 ^m 25 ^s 701		20 25 59 ^h 0 ^m 63 ^s 42		21	19 8 22 ^h 90 ^m 25 ^s 632		22 34 53 ^h 5 ^m 10 ^s 29	
22	17 6 45 ^h 55 ^m 25 ^s 723		20 32 15 ^h 2 ^m 61 ^s 97		22	19 10 56 ^h 62 ^m 25 ^s 605		22 33 47 ^h 2 ^m 11 ^s 80	
23	17 9 19 ^h 96 ^m 25 ^s 745		20 38 22 ^h 6 ^m 60 ^s 51		23	19 13 30 ^h 16 ^m 25 ^s 575		22 32 31 ^h 9 ^m 13 ^s 30	
24	17 11 54 ^h 49 ^m 25 ^s 766		S. 20 44 21 ^h 3 ^m 59 ^s 04		24	19 16 3 ^h 52 ^m 25 ^s 545		S. 22 31 7 ^h 6 ^m 14 ^s 80	

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 21.					TUESDAY 23.				
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
0	19 16 3 ^{.52}	25 ^{.545}	S. 22 31 7 ^{.6}	14 ^{.80}	0	21 13 48 ^{.87}	23 ^{.321}	S. 18 43 4 ^{.0}	76 ^{.31}
1	19 18 36 ^{.70}	25 ^{.515}	22 29 34 ^{.3}	16 ^{.30}	1	21 16 8 ^{.63}	23 ^{.265}	18 35 23 ^{.1}	77 ^{.32}
2	19 21 9 ^{.70}	25 ^{.483}	22 27 52 ^{.0}	17 ^{.79}	2	21 18 28 ^{.05}	23 ^{.210}	18 27 36 ^{.2}	78 ^{.32}
3	19 23 42 ^{.50}	25 ^{.450}	22 26 0 ^{.8}	19 ^{.27}	3	21 20 47 ^{.15}	23 ^{.155}	18 19 43 ^{.3}	79 ^{.31}
4	19 26 15 ^{.10}	25 ^{.417}	22 24 0 ^{.8}	20 ^{.74}	4	21 23 5 ^{.91}	23 ^{.099}	18 11 44 ^{.5}	80 ^{.28}
5	19 28 47 ^{.51}	25 ^{.383}	22 21 51 ^{.9}	22 ^{.21}	5	21 25 24 ^{.34}	23 ^{.045}	18 3 39 ^{.9}	81 ^{.24}
6	19 31 19 ^{.70}	25 ^{.348}	22 19 34 ^{.3}	23 ^{.67}	6	21 27 42 ^{.45}	22 ^{.990}	17 55 29 ^{.6}	82 ^{.19}
7	19 33 51 ^{.68}	25 ^{.312}	22 17 7 ^{.9}	25 ^{.13}	7	21 30 0 ^{.22}	22 ^{.935}	17 47 13 ^{.6}	83 ^{.13}
8	19 36 23 ^{.44}	25 ^{.274}	22 14 32 ^{.8}	26 ^{.57}	8	21 32 17 ^{.67}	22 ^{.880}	17 38 52 ^{.0}	84 ^{.06}
9	19 38 54 ^{.97}	25 ^{.237}	22 11 49 ^{.1}	28 ^{.01}	9	21 34 34 ^{.78}	22 ^{.825}	17 30 24 ^{.9}	84 ^{.98}
10	19 41 26 ^{.28}	25 ^{.198}	22 8 56 ^{.7}	29 ^{.44}	10	21 36 51 ^{.57}	22 ^{.770}	17 21 52 ^{.3}	85 ^{.88}
11	19 43 57 ^{.35}	25 ^{.158}	22 5 55 ^{.8}	30 ^{.86}	11	21 39 8 ^{.02}	22 ^{.715}	17 13 14 ^{.4}	86 ^{.77}
12	19 46 28 ^{.18}	25 ^{.118}	22 2 46 ^{.4}	32 ^{.28}	12	21 41 24 ^{.15}	22 ^{.661}	17 4 31 ^{.1}	87 ^{.65}
13	19 48 58 ^{.77}	25 ^{.078}	21 59 28 ^{.5}	33 ^{.68}	13	21 43 39 ^{.95}	22 ^{.607}	16 55 42 ^{.6}	88 ^{.51}
14	19 51 29 ^{.11}	25 ^{.036}	21 56 2 ^{.3}	35 ^{.07}	14	21 45 55 ^{.43}	22 ^{.553}	16 46 49 ^{.0}	89 ^{.36}
15	19 53 59 ^{.20}	24 ^{.993}	21 52 27 ^{.7}	36 ^{.46}	15	21 48 10 ^{.59}	22 ^{.499}	16 37 50 ^{.3}	90 ^{.20}
16	19 56 29 ^{.03}	24 ^{.950}	21 48 44 ^{.8}	37 ^{.83}	16	21 50 25 ^{.42}	22 ^{.445}	16 28 46 ^{.6}	91 ^{.03}
17	19 58 58 ^{.60}	24 ^{.907}	21 44 53 ^{.7}	39 ^{.21}	17	21 52 39 ^{.93}	22 ^{.392}	16 19 37 ^{.9}	91 ^{.85}
18	20 1 27 ^{.91}	24 ^{.862}	21 40 54 ^{.3}	40 ^{.57}	18	21 54 54 ^{.12}	22 ^{.338}	16 10 24 ^{.4}	92 ^{.65}
19	20 3 56 ^{.94}	24 ^{.817}	21 36 46 ^{.9}	41 ^{.91}	19	21 57 7 ^{.99}	22 ^{.285}	16 1 6 ^{.1}	93 ^{.44}
20	20 6 25 ^{.71}	24 ^{.772}	21 32 31 ^{.4}	43 ^{.25}	20	21 59 21 ^{.54}	22 ^{.232}	15 51 43 ^{.1}	94 ^{.23}
21	20 8 54 ^{.20}	24 ^{.725}	21 28 7 ^{.9}	44 ^{.58}	21	22 1 34 ^{.77}	22 ^{.179}	15 42 15 ^{.4}	95 ^{.00}
22	20 11 22 ^{.41}	24 ^{.678}	21 23 36 ^{.5}	45 ^{.89}	22	22 3 47 ^{.69}	22 ^{.128}	15 32 43 ^{.1}	95 ^{.76}
23	20 13 50 ^{.33}	24 ^{.630}	S. 21 18 57 ^{.2}	47 ^{.20}	23	22 6 0 ^{.30}	22 ^{.075}	S. 15 23 6 ^{.3}	96 ^{.50}
MONDAY 22.					WEDNESDAY 24.				
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
0	20 16 17 ^{.97}	24 ^{.582}	S. 21 14 10 ^{.1}	48 ^{.50}	0	22 8 12 ^{.59}	22 ^{.023}	S. 15 13 25 ^{.1}	97 ^{.23}
1	20 18 45 ^{.32}	24 ^{.533}	21 9 15 ^{.2}	49 ^{.78}	1	22 10 24 ^{.57}	21 ^{.972}	15 3 39 ^{.5}	97 ^{.95}
2	20 21 12 ^{.37}	24 ^{.484}	21 4 12 ^{.7}	51 ^{.06}	2	22 12 36 ^{.25}	21 ^{.921}	14 53 49 ^{.7}	98 ^{.66}
3	20 23 39 ^{.13}	24 ^{.435}	20 59 2 ^{.5}	52 ^{.33}	3	22 14 47 ^{.62}	21 ^{.869}	14 43 55 ^{.6}	99 ^{.37}
4	20 26 5 ^{.59}	24 ^{.385}	20 53 44 ^{.7}	53 ^{.59}	4	22 16 58 ^{.68}	21 ^{.819}	14 33 57 ^{.3}	100 ^{.05}
5	20 28 31 ^{.75}	24 ^{.335}	20 48 19 ^{.4}	54 ^{.83}	5	22 19 9 ^{.45}	21 ^{.769}	14 23 55 ^{.0}	100 ^{.72}
6	20 30 57 ^{.61}	24 ^{.284}	20 42 46 ^{.7}	56 ^{.07}	6	22 21 19 ^{.91}	21 ^{.718}	14 13 48 ^{.7}	101 ^{.38}
7	20 33 23 ^{.16}	24 ^{.233}	20 37 6 ^{.6}	57 ^{.29}	7	22 23 30 ^{.07}	21 ^{.668}	14 3 38 ^{.4}	102 ^{.04}
8	20 35 48 ^{.40}	24 ^{.181}	20 31 19 ^{.2}	58 ^{.50}	8	22 25 39 ^{.93}	21 ^{.619}	13 53 24 ^{.2}	102 ^{.68}
9	20 38 13 ^{.33}	24 ^{.129}	20 25 24 ^{.6}	59 ^{.70}	9	22 27 49 ^{.50}	21 ^{.571}	13 43 6 ^{.3}	103 ^{.30}
10	20 40 37 ^{.95}	24 ^{.077}	20 19 22 ^{.8}	60 ^{.89}	10	22 29 58 ^{.78}	21 ^{.523}	13 32 44 ^{.6}	103 ^{.92}
11	20 43 2 ^{.25}	24 ^{.024}	20 13 13 ^{.9}	62 ^{.08}	11	22 32 7 ^{.77}	21 ^{.474}	13 22 19 ^{.2}	104 ^{.53}
12	20 45 26 ^{.24}	23 ^{.972}	20 6 57 ^{.9}	63 ^{.24}	12	22 34 16 ^{.47}	21 ^{.427}	13 11 50 ^{.2}	105 ^{.13}
13	20 47 49 ^{.91}	23 ^{.918}	20 0 35 ^{.0}	64 ^{.39}	13	22 36 24 ^{.89}	21 ^{.379}	13 1 17 ^{.7}	105 ^{.70}
14	20 50 13 ^{.26}	23 ^{.864}	19 54 5 ^{.2}	65 ^{.53}	14	22 38 33 ^{.02}	21 ^{.333}	12 50 41 ^{.8}	106 ^{.27}
15	20 52 36 ^{.28}	23 ^{.811}	19 47 28 ^{.6}	66 ^{.66}	15	22 40 40 ^{.88}	21 ^{.287}	12 40 2 ^{.4}	106 ^{.84}
16	20 54 58 ^{.99}	23 ^{.758}	19 40 45 ^{.3}	67 ^{.78}	16	22 42 48 ^{.46}	21 ^{.240}	12 29 19 ^{.7}	107 ^{.38}
17	20 57 21 ^{.37}	23 ^{.703}	19 33 55 ^{.3}	68 ^{.89}	17	22 44 55 ^{.76}	21 ^{.194}	12 18 33 ^{.8}	107 ^{.92}
18	20 59 43 ^{.42}	23 ^{.648}	19 26 58 ^{.6}	69 ^{.99}	18	22 47 2 ^{.79}	21 ^{.149}	12 7 44 ^{.7}	108 ^{.45}
19	21 2 5 ^{.15}	23 ^{.594}	19 19 55 ^{.4}	71 ^{.07}	19	22 49 9 ^{.55}	21 ^{.105}	11 56 52 ^{.4}	108 ^{.97}
20	21 4 26 ^{.55}	23 ^{.539}	19 12 45 ^{.8}	72 ^{.13}	20	22 51 16 ^{.05}	21 ^{.061}	11 45 57 ^{.1}	109 ^{.47}
21	21 6 47 ^{.62}	23 ^{.485}	19 5 29 ^{.8}	73 ^{.20}	21	22 53 22 ^{.28}	21 ^{.017}	11 34 58 ^{.8}	109 ^{.96}
22	21 9 8 ^{.37}	23 ^{.430}	18 58 7 ^{.4}	74 ^{.25}	22	22 55 28 ^{.25}	20 ^{.974}	11 23 57 ^{.6}	110 ^{.44}
23	21 11 28 ^{.78}	23 ^{.375}	18 50 38 ^{.8}	75 ^{.28}	23	22 57 33 ^{.97}	20 ^{.932}	11 12 53 ^{.5}	110 ^{.92}
24	21 13 48 ^{.87}	23 ^{.321}	S. 18 43 4 ^{.0}	76 ^{.31}	24	22 59 39 ^{.43}	20 ^{.889}	S. 11 1 46 ^{.6}	111 ^{.38}

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 25.					SATURDAY 27.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	22 59 39.43	20.889	S. 11 146.6	111.38	0	0 36 2.30	19.478	S. 1 33 28.3	121.72
1	23 1 44.64	20.848	10 50 37.0	111.83	1	0 37 59.12	19.462	1 21 18.0	121.71
2	23 3 49.60	20.806	10 39 24.7	112.27	2	0 39 55.84	19.446	1 9 7.8	121.68
3	23 5 54.31	20.765	10 28 9.8	112.69	3	0 41 52.47	19.431	0 56 57.8	121.66
4	23 7 58.78	20.724	10 16 52.4	113.11	4	0 43 49.01	19.417	0 44 47.9	121.63
5	23 10 3.00	20.684	10 5 32.5	113.52	5	0 45 45.47	19.403	0 32 38.3	121.58
6	23 12 6.99	20.646	9 54 10.2	113.92	6	0 47 41.84	19.389	0 20 29.0	121.52
7	23 14 10.75	20.608	9 42 45.5	114.31	7	0 49 38.14	19.377	S. 0 8 20.1	121.46
8	23 16 14.28	20.569	9 31 18.5	114.68	8	0 51 34.36	19.363	N. 0 3 48.5	121.38
9	23 18 17.58	20.531	9 19 49.3	115.04	9	0 53 30.50	19.352	0 15 56.5	121.30
10	23 20 20.65	20.493	9 8 18.0	115.40	10	0 55 26.58	19.341	0 28 4.1	121.22
11	23 22 23.50	20.457	8 56 44.5	115.75	11	0 57 22.59	19.329	0 40 11.1	121.12
12	23 24 26.13	20.421	8 45 9.0	116.08	12	0 59 18.53	19.319	0 52 17.5	121.02
13	23 26 28.55	20.385	8 33 31.6	116.40	13	1 1 14.42	19.310	1 4 23.3	120.90
14	23 28 30.75	20.349	8 21 52.2	116.72	14	1 3 10.25	19.300	1 16 28.3	120.78
15	23 30 32.74	20.315	8 10 11.0	117.03	15	1 5 6.02	19.291	1 28 32.6	120.65
16	23 32 34.53	20.281	7 58 27.9	117.32	16	1 7 1.74	19.283	1 40 36.1	120.52
17	23 34 36.11	20.247	7 46 43.2	117.59	17	1 8 57.42	19.276	1 52 38.8	120.38
18	23 36 37.49	20.214	7 34 56.8	117.87	18	1 10 53.05	19.268	2 4 40.6	120.22
19	23 38 38.68	20.182	7 23 8.7	118.14	19	1 12 48.64	19.262	2 16 41.4	120.05
20	23 40 39.67	20.149	7 11 19.1	118.40	20	1 14 44.19	19.256	2 28 41.2	119.88
21	23 42 40.47	20.118	6 59 27.9	118.65	21	1 16 39.71	19.250	2 40 40.0	119.71
22	23 44 41.09	20.088	6 47 35.3	118.88	22	1 18 35.19	19.244	2 52 37.7	119.52
23	23 46 41.52	20.057	S. 6 35 41.4	119.10	23	1 20 30.64	19.239	N. 3 4 34.2	119.32
FRIDAY 26.					SUNDAY 28.				
0	23 48 41.77	20.027	S. 6 23 46.1	119.32	0	1 22 26.06	19.235	N. 3 16 29.5	119.12
1	23 50 41.84	19.998	6 11 49.6	119.53	1	1 24 21.46	19.232	3 28 23.6	118.92
2	23 52 41.74	19.969	5 59 51.8	119.73	2	1 26 16.84	19.228	3 40 16.5	118.70
3	23 54 41.47	19.942	5 47 52.9	119.91	3	1 28 12.20	19.226	3 52 8.0	118.47
4	23 56 41.04	19.914	5 35 52.9	120.08	4	1 30 7.55	19.223	4 3 58.1	118.23
5	23 58 40.44	19.887	5 23 51.9	120.25	5	1 32 2.88	19.221	4 15 46.8	118.00
6	0 0 39.68	19.860	5 11 49.9	120.42	6	1 33 58.20	19.220	4 27 34.1	117.75
7	0 2 38.76	19.834	4 59 46.9	120.57	7	1 35 53.52	19.219	4 39 19.8	117.48
8	0 4 37.69	19.808	4 47 43.1	120.71	8	1 37 48.83	19.218	4 51 3.9	117.23
9	0 6 36.46	19.783	4 35 38.4	120.84	9	1 39 44.14	19.218	5 2 46.5	116.96
10	0 8 35.09	19.760	4 23 33.0	120.96	10	1 41 39.45	19.219	5 14 27.4	116.68
11	0 10 33.58	19.737	4 11 26.9	121.07	11	1 43 34.77	19.219	5 26 6.6	116.38
12	0 12 31.93	19.713	3 59 20.2	121.17	12	1 45 30.08	19.220	5 37 44.0	116.08
13	0 14 30.14	19.690	3 47 12.9	121.27	13	1 47 25.41	19.223	5 49 19.6	115.78
14	0 16 28.21	19.668	3 35 5.0	121.36	14	1 49 20.75	19.225	6 0 53.4	115.48
15	0 18 26.15	19.647	3 22 56.6	121.43	15	1 51 16.11	19.228	6 12 25.3	115.16
16	0 20 23.97	19.626	3 10 47.8	121.49	16	1 53 11.49	19.231	6 23 55.3	114.83
17	0 22 21.66	19.605	2 58 38.7	121.55	17	1 55 6.88	19.234	6 35 23.3	114.49
18	0 24 19.23	19.585	2 46 29.2	121.61	18	1 57 2.30	19.238	6 46 49.2	114.15
19	0 26 16.68	19.566	2 34 19.4	121.65	19	1 58 57.74	19.243	6 58 13.1	113.81
20	0 28 14.02	19.548	2 22 9.4	121.68	20	2 0 53.21	19.248	7 9 34.9	113.45
21	0 30 11.25	19.529	2 9 59.2	121.71	21	2 2 48.71	19.253	7 20 54.5	113.08
22	0 32 8.37	19.511	1 57 48.9	121.72	22	2 4 44.24	19.258	7 32 11.9	112.72
23	0 34 5.38	19.494	1 45 38.6	121.72	23	2 6 39.81	19.264	7 43 27.1	112.33
24	0 36 2.30	19.478	S. 1 33 28.3	121.72	24	2 8 35.41	19.270	N. 7 54 39.9	111.94

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 29.					TUESDAY 30.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	2 8 35.41	19.270	N. 7 54 39.9	111.94	0	2 55 6.84	19.533	N. 12 10 26.0	100.51
1	2 10 31.05	19.277	8 5 50.4	111.55	1	2 57 4.08	19.548	12 20 27.4	99.94
2	2 12 26.73	19.284	8 16 58.5	111.15	2	2 59 1.41	19.563	12 30 25.3	99.37
3	2 14 22.46	19.292	8 28 4.2	110.75	3	3 0 58.83	19.578	12 40 19.8	98.79
4	2 16 18.23	19.300	8 39 7.5	110.33	4	3 2 56.35	19.594	12 50 10.8	98.21
5	2 18 14.06	19.308	8 50 8.2	109.90	5	3 4 53.96	19.609	12 59 58.3	97.63
6	2 20 9.93	19.317	9 1 6.3	109.48	6	3 6 51.66	19.625	13 9 42.3	97.03
7	2 22 5.86	19.326	9 12 1.9	109.04	7	3 8 49.46	19.643	13 19 22.6	96.41
8	2 24 1.84	19.336	9 22 54.8	108.59	8	3 10 47.37	19.659	13 28 59.2	95.80
9	2 25 57.89	19.346	9 33 45.0	108.13	9	3 12 45.37	19.676	13 38 32.2	95.18
10	2 27 53.99	19.355	9 44 32.4	107.68	10	3 14 43.48	19.693	13 48 1.4	94.56
11	2 29 50.15	19.366	9 55 17.1	107.22	11	3 16 41.69	19.710	13 57 26.9	93.93
12	2 31 46.38	19.377	10 5 59.0	106.74	12	3 18 40.00	19.728	14 6 48.5	93.28
13	2 33 42.67	19.388	10 16 38.0	106.26	13	3 20 38.42	19.746	14 16 6.3	92.64
14	2 35 39.04	19.400	10 27 14.1	105.77	14	3 22 36.95	19.763	14 25 20.2	91.99
15	2 37 35.47	19.411	10 37 47.2	105.28	15	3 24 35.58	19.782	14 34 30.2	91.33
16	2 39 31.97	19.423	10 48 17.4	104.78	16	3 26 34.33	19.800	14 43 36.2	90.67
17	2 41 28.55	19.437	10 58 44.5	104.27	17	3 28 33.18	19.818	14 52 38.2	89.99
18	2 43 25.21	19.449	11 9 8.6	103.75	18	3 30 32.15	19.838	15 1 36.1	89.32
19	2 45 21.94	19.462	11 19 29.5	103.23	19	3 32 31.23	19.856	15 10 30.0	88.63
20	2 47 18.75	19.476	11 29 47.3	102.70	20	3 34 30.42	19.875	15 19 19.7	87.94
21	2 49 15.65	19.490	11 40 1.9	102.16	21	3 36 29.73	19.894	15 28 5.3	87.25
22	2 51 12.63	19.503	11 50 13.2	101.62	22	3 38 29.15	19.913	15 36 46.7	86.54
23	2 53 9.69	19.518	12 0 21.3	101.07	23	3 40 28.69	19.933	15 45 23.8	85.83
24	2 55 6.84	19.533	N. 12 10 26.0	100.51	24	3 42 28.35	19.953	N. 15 53 56.6	85.11

PHASES OF THE MOON.

			^h ^m
Apr. 8)	First Quarter	1 47.0
15	○	Full Moon	10 18.6
22	☾	Last Quarter	1 55.8
29	●	New Moon	14 5.0

			^h
Apr. 5	☾	Apogee	17
17	☾	Perigee	14

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
2	SUN W.	23 50 21	3363	25 13 20	3362	26 36 20	3364	27 59 18	3367
	Pollux E.	76 3 55	2928	74 32 12	2938	73 0 41	2948	71 29 23	2957
	Saturn E.	97 17 22	2894	95 44 55	2904	94 12 41	2913	92 40 38	2922
	Regulus E.	111 54 53	2908	110 22 44	2916	108 50 45	2925	107 18 58	2935
3	SUN W.	34 53 1	3390	36 15 29	3395	37 37 51	3400	39 0 7	3406
	Pollux E.	63 55 46	3003	62 25 37	3011	60 55 38	3020	59 25 50	3029
	Saturn E.	85 3 12	2965	83 32 15	2973	82 1 28	2980	80 30 50	2988
	Regulus E.	99 42 49	2977	98 12 7	2984	96 41 34	2992	95 11 11	2999
4	SUN W.	45 49 53	3433	47 11 32	3438	48 33 6	3442	49 54 35	3446
	Pollux E.	51 59 25	3069	50 30 37	3076	49 1 58	3084	47 33 29	3091
	Saturn E.	72 59 55	3021	71 30 9	3026	70 0 29	3032	68 30 56	3037
	Regulus E.	87 41 26	3032	86 11 53	3038	84 42 27	3043	83 13 8	3048
5	SUN W.	56 40 52	3463	58 1 57	3466	59 22 59	3468	60 43 59	3470
	Venus W.	25 26 32	3535	26 46 17	3498	28 6 43	3465	29 27 46	3436
	Pollux E.	40 13 10	3126	38 45 32	3133	37 18 3	3140	35 50 42	3147
	Saturn E.	61 4 38	3058	59 35 37	3061	58 6 39	3063	56 37 44	3065
	Regulus E.	75 47 57	3069	74 19 9	3071	72 50 24	3073	71 21 42	3076
6	SUN W.	67 28 40	3471	68 49 37	3471	70 10 34	3469	71 31 33	3467
	Venus W.	36 20 2	3333	37 43 36	3318	39 7 27	3302	40 31 36	3288
	Saturn E.	49 13 40	3069	47 44 53	3069	46 16 6	3068	44 47 17	3067
	Regulus E.	63 58 43	3081	62 30 10	3080	61 1 36	3079	59 33 1	3078
7	SUN W.	78 17 13	3450	79 38 33	3445	80 59 59	3439	82 21 31	3433
	Venus W.	47 36 11	3225	49 1 50	3214	50 27 43	3202	51 53 50	3190
	Aldebaran W.	28 14 7	3071	29 42 52	3065	31 11 44	3060	32 40 43	3053
	Saturn E.	37 22 40	3053	35 53 33	3049	34 24 21	3045	32 55 4	3039
	Regulus E.	52 9 30	3065	50 40 37	3061	49 11 40	3056	47 42 37	3052
	Spica E.	106 6 16	3091	104 37 56	3087	103 9 30	3081	101 40 57	3076
8	SUN W.	89 11 4	3396	90 33 25	3387	91 55 56	3379	93 18 37	3368
	Venus W.	59 8 2	3129	60 35 37	3115	62 3 28	3103	63 31 34	3089
	Aldebaran W.	40 7 45	3016	41 37 38	3008	43 7 41	2998	44 37 56	2989
	Regulus E.	40 15 43	3022	38 45 57	3014	37 16 2	3006	35 45 57	2999
	Spica E.	94 16 20	3041	92 46 58	3033	91 17 26	3024	89 47 43	3014
9	SUN W.	100 15 6	3313	101 39 3	3299	103 3 16	3287	104 27 43	3273
	Venus W.	70 56 16	3019	72 26 5	3005	73 56 12	2989	75 26 38	2973
	Aldebaran W.	52 12 18	2935	53 43 52	2924	55 15 41	2912	56 47 45	2899
	Spica E.	82 16 9	2963	80 45 10	2953	79 13 58	2941	77 42 31	2928
10	SUN W.	111 34 4	3201	113 0 12	3185	114 26 39	3170	115 53 24	3153
	Venus W.	83 3 44	2894	84 36 11	2877	86 8 59	2861	87 42 8	2844
	Aldebaran W.	64 32 19	2831	66 6 7	2815	67 40 15	2801	69 14 42	2785
	Pollux W.	21 6 51	3016	22 36 44	2977	24 7 25	2943	25 38 49	2912
	Spica E.	70 1 16	2864	68 28 11	2850	66 54 48	2836	65 21 7	2821
	Antares E.	115 54 49	2874	114 21 57	2857	112 48 43	2842	111 15 9	2826
11	SUN W.	123 12 7	3070	124 40 53	3053	126 10 0	3036	127 39 28	3019
	Venus W.	95 33 30	2756	97 8 55	2739	98 44 43	2721	100 20 55	2704
	Aldebaran W.	77 12 5	2705	78 48 38	2689	80 25 33	2672	82 2 50	2655

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]
2	SUN W.	29 22 12	3371	30 45 2	3375	32 7 47	3379	33 30
	Pollux E.	69 58 16	2966	68 27 21	2976	66 56 38	2985	65 26
	Saturn E.	91 8 47	2931	89 37 7	2939	88 5 38	2948	86 34
	Regulus E.	105 47 23	2943	104 15 58	2952	102 44 45	2960	101 13
3	SUN W.	40 22 16	3411	41 44 20	3417	43 6 17	3423	44 28
	Pollux E.	57 56 13	3037	56 26 46	3046	54 57 30	3053	53 28
	Saturn E.	79 0 22	2994	77 30 2	3002	75 59 52	3008	74 29
	Regulus E.	93 40 57	3005	92 10 51	3014	90 40 55	3020	89 11
4	SUN W.	51 15 59	3451	52 37 18	3454	53 58 33	3458	55 19
	Pollux E.	46 5 8	3097	44 36 55	3105	43 8 52	3112	41 40
	Saturn E.	67 1 29	3043	65 32 9	3047	64 2 54	3051	62 33
	Regulus E.	81 43 55	3053	80 14 48	3057	78 45 46	3061	77 16
5	SUN W.	62 4 57	3471	63 25 53	3471	64 46 49	3472	66 7
	Venus W.	30 49 22	3411	32 11 26	3389	33 33 55	3368	34 56
	Pollux E.	34 23 29	3155	32 56 26	3163	31 29 33	3172	30 2
	Saturn E.	55 8 52	3067	53 40 2	3069	52 11 14	3069	50 42
	Regulus E.	69 53 3	3078	68 24 26	3079	66 55 51	3080	65 27
6	SUN W.	72 52 34	3464	74 13 38	3461	75 34 46	3458	76 55
	Venus W.	41 56 1	3276	43 20 41	3263	44 45 36	3250	46 10
	Saturn E.	43 18 27	3065	41 49 35	3063	40 20 40	3060	38 51
	Regulus E.	58 4 24	3076	56 35 45	3073	55 7 3	3072	53 38
7	SUN W.	83 43 10	3427	85 4 56	3420	86 26 50	3412	87 48
	Venus W.	53 20 11	3178	54 46 47	3166	56 13 37	3153	57 40
	Aldebaran W.	34 9 50	3047	35 39 5	3039	37 8 29	3032	38 38
	Saturn E.	31 25 40	3034	29 56 10	3029	28 26 33	3022	26 56
	Regulus E.	46 13 28	3047	44 44 13	3042	43 14 51	3034	41 45
	Spica E.	100 12 18	3069	98 43 31	3063	97 14 36	3056	95 45
8	SUN W.	94 41 30	3358	96 4 35	3347	97 27 52	3336	98 51
	Venus W.	64 59 57	3076	66 28 36	3062	67 57 32	3048	69 26
	Aldebaran W.	46 8 23	2979	47 39 2	2969	49 9 54	2958	50 40
	Regulus E.	34 15 43	2991	32 45 20	2981	31 14 44	2973	29 43
	Spica E.	88 17 48	3005	86 47 42	2996	85 17 24	2985	83 46
9	SUN W.	105 52 26	3259	107 17 25	3245	108 42 41	3231	110 8
	Venus W.	76 57 24	2958	78 28 29	2943	79 59 53	2927	81 31
	Aldebaran W.	58 20 5	2885	59 52 43	2873	61 25 37	2859	62 58
	Spica E.	76 10 48	2916	74 38 50	2903	73 6 35	2891	71 34
10	SUN W.	117 20 29	3138	118 47 53	3121	120 15 37	3104	121 43
	Venus W.	89 15 39	2826	90 49 33	2809	92 23 49	2792	93 58
	Aldebaran W.	70 49 29	2770	72 24 36	2753	74 0 5	2738	75 35
	Pollux W.	27 10 52	2883	28 43 32	2857	30 16 46	2831	31 50
	Spica E.	63 47 7	2808	62 12 49	2793	60 38 12	2779	59 3
	Antares E.	109 41 15	2809	108 6 59	2792	106 32 21	2776	104 57
11	SUN W.	129 9 17	3002	130 39 27	2984	132 10 0	2968	133 40
	Venus W.	101 57 29	2687	103 34 27	2668	105 11 50	2652	106 49
	Aldebaran W.	83 40 30	2638	85 18 33	2621	86 56 59	2604	88 35

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
11	Pollux W.	33 24 54	2783	34 59 44	2760	36 35 5	2738	38 10 55	2716
	Spica E.	57 28 0	2749	55 52 25	2735	54 16 31	2719	52 40 17	2705
	Antares E.	103 22 1	2742	101 46 17	2725	100 10 11	2708	98 33 42	2691
12	Aldebaran W.	90 15 1	2569	91 54 38	2553	93 34 38	2535	95 15 3	2518
	Pollux W.	46 17 8	2613	47 55 45	2593	49 34 49	2574	51 14 20	2555
	Saturn W.	24 48 23	2569	26 28 0	2551	28 8 2	2534	29 48 28	2517
	Spica E.	44 34 21	2635	42 56 14	2623	41 17 50	2610	39 39 9	2599
	Antares E.	90 25 30	2604	88 46 41	2588	87 7 29	2570	85 27 53	2553
	Jupiter E.	119 49 26	2579	118 10 2	2561	116 30 14	2543	114 50 1	2527
13	Aldebaran W.	103 43 1	2433	105 25 48	2417	107 8 58	2401	108 52 31	2385
	Pollux W.	59 38 24	2463	61 20 29	2445	63 2 59	2428	64 45 54	2411
	Saturn W.	38 16 39	2431	39 59 29	2414	41 42 43	2398	43 26 20	2382
	Regulus W.	23 39 2	2462	25 21 8	2442	27 3 43	2423	28 46 45	2404
	Spica E.	31 22 18	2560	29 42 28	2558	28 2 35	2559	26 22 44	2564
	Antares E.	77 4 4	2470	75 22 9	2455	73 39 53	2439	71 57 14	2424
	Jupiter E.	106 22 59	2441	104 40 22	2424	102 57 22	2408	101 13 59	2391
14	Pollux W.	73 26 21	2332	75 11 34	2317	76 57 8	2303	78 43 3	2289
	Saturn W.	52 10 4	2306	53 55 54	2292	55 42 5	2278	57 28 36	2265
	Regulus W.	37 28 21	2320	39 13 52	2304	40 59 45	2289	42 46 0	2276
	Antares E.	63 18 45	2354	61 34 4	2342	59 49 5	2329	58 3 48	2318
	Jupiter E.	92 31 21	2315	90 45 43	2301	88 59 45	2287	87 13 26	2273
	α Aquilæ E.	108 41 19	2029	107 11 42	2001	105 41 30	2975	104 10 46	2951
15	Pollux W.	87 37 27	2228	89 25 13	2218	91 13 14	2207	93 1 31	2198
	Saturn W.	66 25 56	2204	68 14 17	2194	70 2 53	2184	71 51 44	2175
	Regulus W.	51 42 12	2212	53 30 21	2201	55 18 47	2190	57 7 29	2181
	Antares E.	49 13 37	2272	47 26 57	2266	45 40 7	2260	43 53 9	2256
	Jupiter E.	78 17 4	2212	76 28 54	2202	74 40 29	2191	72 51 48	2182
	α Aquilæ E.	96 30 9	2255	94 56 53	2242	93 23 19	2228	91 49 28	2218
16	Pollux W.	102 6 8	2160	103 55 36	2154	105 45 13	2149	107 34 57	2145
	Saturn W.	80 59 18	2136	82 49 22	2130	84 39 36	2124	86 29 58	2120
	Regulus W.	66 14 21	2141	68 4 18	2134	69 54 25	2129	71 44 40	2124
	Antares E.	34 57 27	2258	33 10 25	2265	31 23 34	2274	29 36 57	2287
	Jupiter E.	63 45 2	2141	61 55 6	2135	60 5 1	2130	58 14 48	2125
	α Aquilæ E.	83 57 30	2790	82 22 49	2789	80 48 7	2791	79 13 27	2795
17	Saturn W.	95 43 20	2105	97 34 12	2103	99 25 7	2103	101 16 2	2103
	Regulus W.	80 57 33	2107	82 48 21	2107	84 39 10	2105	86 30 1	2106
	Spica W.	27 39 1	2249	29 26 15	2232	31 13 55	2218	33 1 55	2207
	Jupiter E.	49 2 3	2109	47 11 18	2107	45 20 30	2106	43 29 40	2107
	α Aquilæ E.	71 22 10	2843	69 48 38	2859	68 15 27	2880	66 42 42	2901
	Fomalhaut E.	103 39 17	2317	101 53 42	2312	100 8 0	2309	98 22 14	2307
18	Saturn W.	110 30 21	2111	112 21 3	2114	114 11 40	2118	116 2 12	2123
	Regulus W.	95 43 58	2114	97 34 36	2117	99 25 9	2120	101 15 37	2125
	Spica W.	42 5 7	2179	43 54 6	2177	45 43 8	2178	47 32 9	2178
	Jupiter E.	34 15 48	2114	32 25 10	2117	30 34 37	2120	28 44 9	2125
	α Aquilæ E.	59 7 13	3060	57 38 15	3103	56 10 9	3152	54 43 2	3205

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^a .	P.L. of diff.	XVIII ^a .	P.L. of diff.	XXI ^a .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
11	Pollux W.	39 47 13	2695	41 24 0	2673	43 1 16	2654	44 38 58	2633
	Spica E.	51 3 44	2690	49 26 51	2677	47 49 40	2663	46 12 10	2649
	Antares E.	96 56 50	2674	95 19 35	2657	93 41 57	2639	92 3 55	2622
12	Aldebaran W.	96 55 51	2501	98 37 3	2484	100 18 39	2467	102 0 38	2450
	Pollux W.	52 54 17	2536	54 34 40	2517	56 15 29	2499	57 56 44	2481
	Saturn W.	31 29 18	2500	33 10 32	2482	34 52 10	2465	36 34 13	2448
	Spica E.	38 0 12	2588	36 21 1	2579	34 41 37	2571	33 2 2	2564
	Antares E.	83 47 54	2536	82 7 31	2520	80 26 45	2503	78 45 36	2487
	Jupiter E.	113 9 25	2509	111 28 24	2492	109 47 0	2475	108 5 31	2458
13	Aldebaran W.	110 36 27	2369	112 20 46	2355	114 5 26	2339	115 50 29	2324
	Pollux W.	66 29 13	2394	68 12 56	2379	69 57 1	2362	71 41 30	2347
	Saturn W.	45 10 20	2366	46 54 43	2351	48 39 28	2336	50 24 35	2321
	Regulus W.	30 30 14	2386	32 14 9	2368	33 58 29	2352	35 43 13	2335
	Spica E.	24 42 59	2574	23 3 28	2590	21 24 19	2615	19 45 45	2654
	Antares E.	70 14 14	2409	68 30 52	2394	66 47 9	2381	65 3 7	2367
	Jupiter E.	99 30 12	2376	97 46 3	2360	96 1 31	2345	94 16 37	2330
14	Pollux W.	80 29 18	2276	82 15 53	2264	84 2 46	2251	85 49 58	2239
	Saturn W.	59 15 27	2252	61 2 37	2239	62 50 6	2228	64 37 52	2216
	Regulus W.	44 32 35	2262	46 19 31	2248	48 6 47	2237	49 54 20	2224
	Antares E.	56 18 15	2307	54 32 26	2298	52 46 23	2288	51 0 6	2280
	Jupiter E.	85 26 47	2260	83 39 48	2247	81 52 31	2235	80 4 56	2224
	α Aquilæ E.	102 39 32	2228	101 7 49	2207	99 35 39	2188	98 3 5	2171
15	Pollux W.	94 50 1	2189	96 38 45	2181	98 27 41	2173	100 16 49	2166
	Saturn W.	73 40 49	2166	75 30 8	2157	77 19 40	2150	79 9 23	2142
	Regulus W.	58 56 25	2172	60 45 35	2163	62 34 58	2155	64 24 34	2147
	Antares E.	42 6 5	2253	40 18 56	2251	38 31 45	2252	36 44 35	2253
	Jupiter E.	71 2 53	2172	69 13 43	2164	67 24 21	2156	65 34 47	2149
	α Aquilæ E.	90 15 24	2208	88 41 7	2201	87 6 41	2196	85 32 8	2192
16	Pollux W.	109 24 48	2141	111 14 44	2138	113 4 45	2136	114 54 50	2134
	Saturn W.	88 20 27	2115	90 11 3	2112	92 1 44	2109	93 52 30	2106
	Regulus W.	73 35 3	2119	75 25 33	2115	77 16 9	2113	79 6 49	2110
	Antares E.	27 50 39	2305	26 4 47	2328	24 19 29	2339	22 34 55	2398
	Jupiter E.	56 24 27	2120	54 33 58	2117	52 43 25	2113	50 52 46	2111
	α Aquilæ E.	77 38 52	2200	76 4 24	2208	74 30 6	2217	72 56 0	2229
17	Saturn W.	103 6 57	2103	104 57 52	2105	106 48 44	2106	108 39 34	2108
	Regulus W.	88 20 51	2106	90 11 41	2107	92 2 29	2109	93 53 15	2111
	Spica W.	34 50 12	2198	36 38 42	2191	38 27 23	2186	40 16 12	2182
	Jupiter E.	41 38 51	2107	39 48 2	2108	37 57 15	2109	36 6 30	2111
	α Aquilæ E.	65 10 25	2226	63 38 39	2254	62 7 29	2286	60 36 59	3022
	Fomalhaut E.	96 36 25	2306	94 50 34	2306	93 4 43	2307	91 18 53	2309
18	Saturn W.	117 52 36	2127	119 42 54	2133	121 33 3	2138	123 23 4	2145
	Regulus W.	103 5 58	2130	104 56 11	2135	106 46 17	2141	108 36 13	2147
	Spica W.	49 21 9	2180	51 10 7	2182	52 59 2	2185	54 47 52	2189
	Jupiter E.	26 53 48	2130	25 3 34	2134	23 13 27	2140	21 23 29	2147
	α Aquilæ E.	53 16 59	2263	51 52 4	2329	50 28 26	2400	49 6 10	2480

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
18	Fomalhaut E.	89 33 6	2311	87 47 23	2315	86 1 45	2320	84 16 14	2325
	α Pegasi E.	105 39 9	2532	103 58 40	2528	102 18 6	2526	100 37 29	2525
19	Regulus W.	110 26 0	2153	112 15 38	2161	114 5 4	2169	115 54 19	2176
	Spica W.	56 36 36	2194	58 25 13	2198	60 13 43	2204	62 2 4	2211
	α Aquilæ E.	47 45 23	3568	46 26 14	3665	45 8 50	3773	43 53 20	3895
	Fomalhaut E.	75 31 6	2366	73 46 43	2377	72 2 35	2389	70 18 45	2402
	α Pegasi E.	92 14 47	2541	90 34 31	2548	88 54 24	2556	87 14 28	2564
	SUN E.	130 48 25	2475	129 6 36	2481	127 24 56	2488	125 43 26	2494
20	Spica W.	71 1 16	2249	72 48 31	2258	74 35 33	2266	76 22 22	2276
	Antares W.	25 38 32	2410	27 21 52	2397	29 5 31	2388	30 49 23	2382
	Fomalhaut E.	61 44 36	2482	60 2 58	2502	58 21 47	2522	56 41 4	2544
	α Pegasi E.	78 58 22	2625	77 20 1	2640	75 42 1	2657	74 4 24	2675
	SUN E.	117 18 35	2537	115 38 13	2546	113 58 4	2556	112 18 9	2566
21	Spica W.	85 12 50	2326	86 58 11	2337	88 43 16	2348	90 28 5	2359
	Antares W.	39 29 37	2385	41 13 33	2390	42 57 22	2396	44 41 3	2402
	Fomalhaut E.	48 25 52	2681	46 48 47	2714	45 12 26	2752	43 36 55	2792
	α Pegasi E.	66 2 43	2782	64 27 51	2807	62 53 32	2835	61 19 49	2863
	SUN E.	104 2 11	2621	102 23 44	2632	100 45 33	2643	99 7 37	2656
22	Spica W.	99 8 6	2417	100 51 17	2429	102 34 11	2440	104 16 49	2452
	Antares W.	53 16 58	2441	54 59 34	2450	56 41 58	2459	58 24 9	2468
	Jupiter W.	23 17 26	2386	25 1 21	2396	26 45 1	2407	28 28 25	2419
	Fomalhaut E.	35 54 6	3063	34 25 11	3137	32 57 46	3221	31 32 2	3317
	α Pegasi E.	53 41 16	3039	52 11 51	3082	50 43 19	3129	49 15 44	3178
	SUN E.	91 1 59	2716	89 25 40	2727	87 49 36	2740	86 13 49	2752
23	Antares W.	66 51 42	2517	68 32 32	2527	70 13 7	2538	71 53 28	2547
	Jupiter W.	37 1 27	2474	38 43 16	2485	40 24 50	2496	42 6 9	2507
	α Aquilæ E.	34 56 3	3569	35 44 51	3407	36 36 41	3519	37 31 18	3491
	α Pegasi E.	42 14 17	3501	40 53 54	3586	39 35 4	3679	38 17 55	3784
	SUN E.	78 18 53	2812	76 44 41	2825	75 10 45	2837	73 37 5	2848
24	Antares W.	80 11 45	2598	81 50 43	2608	83 29 27	2618	85 7 57	2628
	Jupiter W.	50 29 0	2560	52 8 50	2569	53 48 27	2580	55 27 49	2590
	α Aquilæ W.	42 38 36	4294	43 45 34	4199	44 54 1	4116	46 3 47	4041
	SUN E.	65 52 32	2908	64 20 23	2919	62 48 28	2931	61 16 49	2942
25	Antares W.	93 17 5	2678	94 54 15	2688	96 31 11	2697	98 7 55	2707
	Jupiter W.	63 41 17	2640	65 19 18	2649	66 57 7	2658	68 34 43	2667
	α Aquilæ W.	52 8 38	3773	53 24 8	3736	54 40 17	3702	55 57 2	3672
	SUN E.	53 42 6	2999	52 11 52	3010	50 41 52	3022	49 12 6	3033
26	Antares W.	106 8 18	2756	107 43 44	2766	109 18 57	2775	110 53 58	2785
	Jupiter W.	76 39 40	2713	78 16 3	2722	79 52 14	2730	81 28 14	2738
	α Aquilæ W.	62 27 45	3565	63 46 57	3551	65 6 25	3539	66 26 6	3527
	SUN E.	41 46 46	3090	40 18 24	3101	38 50 16	3113	37 22 22	3125
27	Jupiter W.	89 25 25	2780	91 0 19	2789	92 35 1	2796	94 9 34	2805
	α Aquilæ W.	73 6 57	3497	74 27 25	3494	75 47 56	3493	77 8 28	3492
	SUN E.	30 6 37	3190	28 40 16	3204	27 14 11	3220	25 48 26	3236

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^a .	P.L. of diff.	XVIII ^a .	P.L. of diff.	XXI ^a .	P.L. of diff.
18	Fomalhaut E.	82 30 51	2332	80 45 38	2339	79 0 35	2347	77 15 44	2356
	α Pegasi E.	98 56 51	2526	97 16 14	2528	95 35 40	2531	93 55 10	2536
19	Regulus W.	117 43 22	2184	119 32 13	2193	121 20 51	2202	123 9 15	2211
	Spica W.	63 50 15	2217	65 38 17	2225	67 26 8	2232	69 13 48	2240
	α Aquilæ E.	42 39 55	4030	41 28 45	4180	40 20 0	4350	39 13 53	4541
	Fomalhaut E.	68 35 13	2416	66 52 1	2431	65 9 10	2446	63 26 41	2463
	α Pegasi E.	85 34 44	2574	83 55 14	2586	82 16 0	2598	80 37 2	2611
	SUN E.	124 2 5	2502	122 20 55	2510	120 39 56	2519	118 59 9	2528
20	Spica W.	78 8 57	2286	79 55 17	2296	81 41 23	2306	83 27 14	2316
	Antares W.	32 33 23	2380	34 17 27	2379	36 1 32	2380	37 45 36	2382
	Fomalhaut E.	55 0 52	2568	53 21 13	2593	51 42 8	2620	50 3 40	2649
	α Pegasi E.	72 27 10	2693	70 50 21	2714	69 14 0	2735	67 38 6	2758
	SUN E.	110 38 28	2577	108 59 2	2588	107 19 50	2599	105 40 53	2610
21	Spica W.	92 12 38	2371	93 56 54	2382	95 40 55	2394	97 24 39	2405
	Antares W.	46 24 35	2409	48 7 57	2416	49 51 9	2424	51 34 9	2432
	Fomalhaut E.	42 2 17	2835	40 28 35	2884	38 55 56	2937	37 24 24	2996
	α Pegasi E.	59 46 43	2894	58 14 16	2927	56 42 31	2962	55 11 30	2999
	SUN E.	97 29 58	2667	95 52 34	2679	94 15 26	2692	92 38 35	2703
22	Spica W.	105 59 10	2464	107 41 14	2477	109 23 0	2488	111 4 30	2500
	Antares W.	60 6 7	2478	61 47 51	2487	63 29 22	2497	65 10 39	2507
	Jupiter W.	30 11 33	2430	31 54 25	2441	33 37 1	2452	35 19 22	2463
	Fomalhaut E.	30 8 10	3228	28 46 25	3255	27 27 1	3270	26 10 17	3287
	α Pegasi E.	47 49 8	3232	46 23 37	3290	44 59 14	3355	43 36 6	3424
	SUN E.	84 38 18	2764	83 3 3	2776	81 28 4	2788	79 53 20	2801
23	Antares W.	73 33 36	2558	75 13 29	2568	76 53 8	2577	78 32 34	2588
	Jupiter W.	43 47 13	2518	45 28 1	2528	47 8 36	2539	48 48 55	2549
	α Aquilæ W.	38 28 28	4806	39 27 59	4653	40 29 38	4518	41 33 14	4399
	α Pegasi E.	37 2 36	3899	35 49 15	4029	34 38 4	4175	33 29 14	4342
	SUN E.	72 3 40	2860	70 30 30	2873	68 57 36	2884	67 24 57	2895
24	Antares W.	86 46 14	2638	88 24 17	2648	90 2 7	2658	91 39 43	2669
	Jupiter W.	57 6 57	2599	58 45 53	2610	60 24 34	2620	62 3 2	2629
	α Aquilæ W.	47 14 46	3975	48 26 50	3916	49 39 54	3862	50 53 52	3816
	SUN E.	59 45 23	2954	58 14 13	2965	56 43 16	2977	55 12 34	2988
25	Antares W.	99 44 25	2716	101 20 43	2727	102 56 47	2736	104 32 39	2746
	Jupiter W.	70 12 7	2676	71 49 19	2686	73 26 18	2695	75 3 5	2704
	α Aquilæ W.	57 14 19	3645	58 32 5	3621	59 50 17	3600	61 8 51	3582
	SUN E.	47 42 34	3044	46 13 16	3056	44 44 12	3067	43 15 22	3078
26	Antares W.	112 28 46	2794	114 3 22	2804	115 37 45	2814	117 11 55	2824
	Jupiter W.	83 4 3	2747	84 39 40	2756	86 15 6	2764	87 50 21	2772
	α Aquilæ W.	67 46 0	3519	69 6 3	3511	70 26 15	3506	71 46 33	3500
	SUN E.	35 54 43	3138	34 27 19	3149	33 0 9	3163	31 33 15	3176
27	Jupiter W.	95 43 55	2812	97 18 7	2821	98 52 8	2829	100 25 58	2837
	α Aquilæ W.	78 29 1	3493	79 49 33	3495	81 10 3	3497	82 30 31	3500
	SUN E.	24 23 0	3254	22 57 55	3274	21 33 13	3296	20 8 57	3319

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		h m s	s	° ' "	"	m s	m. s	s
Wed.	1	2 35 21.23	9.554	N.15 13 12.0	45.09	1 6.08	3 3.36	0.301
Thur.	2	2 39 10.80	9.577	15 31 6.6	44.46	1 6.16	3 10.32	0.279
Frid.	3	2 43 0.92	9.600	15 48 45.9	43.81	1 6.24	3 16.74	0.256
Sat.	4	2 46 51.58	9.622	16 6 9.5	43.15	1 6.32	3 22.62	0.234
Sun.	5	2 50 42.79	9.645	16 23 17.0	42.47	1 6.40	3 27.95	0.211
Mon.	6	2 54 34.55	9.668	16 40 8.2	41.79	1 6.48	3 32.74	0.188
Tues.	7	2 58 26.86	9.691	16 56 42.7	41.08	1 6.56	3 36.97	0.165
Wed.	8	3 2 19.72	9.714	17 13 0.2	40.37	1 6.65	3 40.66	0.142
Thur.	9	3 6 13.13	9.737	17 29 0.4	39.64	1 6.73	3 43.79	0.119
Frid.	10	3 10 7.10	9.760	17 44 43.1	38.90	1 6.81	3 46.37	0.096
Sat.	11	3 14 1.63	9.784	18 0 7.8	38.15	1 6.89	3 48.39	0.073
Sun.	12	3 17 56.71	9.807	18 15 14.3	37.39	1 6.98	3 49.86	0.049
Mon.	13	3 21 52.36	9.831	18 30 2.5	36.62	1 7.06	3 50.76	0.026
Tues.	14	3 25 48.58	9.854	18 44 31.9	35.83	1 7.14	3 51.10	0.002
Wed.	15	3 29 45.37	9.878	18 58 42.3	35.03	1 7.22	3 50.87	0.022
Thur.	16	3 33 42.74	9.902	19 12 33.5	34.23	1 7.30	3 50.06	0.046
Frid.	17	3 37 40.68	9.926	19 26 5.3	33.41	1 7.38	3 48.68	0.069
Sat.	18	3 41 39.19	9.950	19 39 17.4	32.59	1 7.46	3 46.73	0.093
Sun.	19	3 45 38.27	9.974	19 52 9.6	31.75	1 7.54	3 44.21	0.117
Mon.	20	3 49 37.92	9.997	20 4 41.6	30.91	1 7.62	3 41.13	0.140
Tues.	21	3 53 38.13	10.020	20 16 53.1	30.05	1 7.69	3 37.49	0.163
Wed.	22	3 57 38.89	10.043	20 28 44.0	29.18	1 7.77	3 33.30	0.186
Thur.	23	4 1 40.19	10.065	20 40 13.9	28.30	1 7.84	3 28.56	0.209
Frid.	24	4 5 42.03	10.087	20 51 22.5	27.41	1 7.91	3 23.29	0.230
Sat.	25	4 9 44.39	10.109	21 2 9.8	26.52	1 7.98	3 17.50	0.252
Sun.	26	4 13 47.26	10.130	21 12 35.4	25.61	1 8.04	3 11.21	0.273
Mon.	27	4 17 50.63	10.150	21 22 39.1	24.69	1 8.11	3 4.41	0.293
Tues.	28	4 21 54.48	10.170	21 32 20.7	23.77	1 8.18	2 57.14	0.313
Wed.	29	4 25 58.80	10.189	21 41 39.9	22.83	1 8.25	2 49.40	0.332
Thur.	30	4 30 3.56	10.207	21 50 36.6	21.89	1 8.31	2 41.22	0.350
Frid.	31	4 34 8.74	10.224	21 59 10.5	20.94	1 8.37	2 32.62	0.367
Sat.	32	4 38 14.33	10.241	N.22 7 21.6	19.98	1 8.43	2 23.61	0.384

*Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		<i>h m s</i>	<i>° ' "</i>	<i>' "</i>	<i>m s</i>	<i>h m s</i>
Wed.	1	2 35 21.72	N.15 13 14.3	15 53.9	3 3.38	2 38 25.09
Thur.	2	2 39 11.31	15 31 8.9	15 53.7	3 10.34	2 42 21.65
Frid.	3	2 43 1.45	15 48 48.2	15 53.4	3 16.76	2 46 18.20
Sat.	4	2 46 52.12	16 6 11.9	15 53.2	3 22.64	2 50 14.76
Sun.	5	2 50 43.35	16 23 19.4	15 53.0	3 27.97	2 54 11.31
Mon.	6	2 54 35.12	16 40 10.6	15 52.8	3 32.75	2 58 7.87
Tues.	7	2 58 27.44	16 56 45.2	15 52.6	3 36.98	3 2 4.42
Wed.	8	3 2 20.31	17 13 2.7	15 52.3	3 40.67	3 6 0.98
Thur.	9	3 6 13.73	17 29 2.9	15 52.1	3 43.80	3 9 57.54
Frid.	10	3 10 7.71	17 44 45.5	15 51.9	3 46.38	3 13 54.09
Sat.	11	3 14 2.25	18 0 10.2	15 51.7	3 48.40	3 17 50.65
Sun.	12	3 17 57.34	18 15 16.7	15 51.5	3 49.87	3 21 47.20
Mon.	13	3 21 52.99	18 30 4.8	15 51.3	3 50.77	3 25 43.76
Tues.	14	3 25 49.22	18 44 34.2	15 51.1	3 51.10	3 29 40.31
Wed.	15	3 29 46.01	18 58 44.6	15 50.9	3 50.87	3 33 36.87
Thur.	16	3 33 43.37	19 12 35.7	15 50.7	3 50.06	3 37 33.43
Frid.	17	3 37 41.31	19 26 7.4	15 50.5	3 48.67	3 41 29.98
Sat.	18	3 41 39.82	19 39 19.5	15 50.3	3 46.72	3 45 26.54
Sun.	19	3 45 38.89	19 52 11.6	15 50.2	3 44.20	3 49 23.09
Mon.	20	3 49 38.53	20 4 43.5	15 50.0	3 41.12	3 53 19.65
Tues.	21	3 53 38.73	20 16 55.0	15 49.8	3 37.48	3 57 16.21
Wed.	22	3 57 39.48	20 28 45.7	15 49.6	3 33.28	4 1 12.76
Thur.	23	4 1 40.77	20 40 15.5	15 49.4	3 28.55	4 5 9.32
Frid.	24	4 5 42.60	20 51 24.1	15 49.3	3 23.28	4 9 5.88
Sat.	25	4 9 44.95	21 2 11.2	15 49.1	3 17.49	4 13 2.43
Sun.	26	4 13 47.80	21 12 36.7	15 49.0	3 11.19	4 16 58.99
Mon.	27	4 17 51.15	21 22 40.3	15 48.8	3 4.40	4 20 55.55
Tues.	28	4 21 54.98	21 32 21.8	15 48.6	2 57.13	4 24 52.10
Wed.	29	4 25 59.28	21 41 41.0	15 48.5	2 49.39	4 28 48.66
Thur.	30	4 30 4.01	21 50 37.6	15 48.3	2 41.21	4 32 45.22
Frid.	31	4 34 9.17	21 59 11.4	15 48.2	2 32.60	4 36 41.78
Sat.	32	4 38 14.74	N.22 7 22.4	15 48.1	2 23.59	4 40 38.33

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>		<i>Noon.</i>	<i>Midnight.</i>	<i>Noon.</i>	<i>Midnight.</i>
° ' "	° ' "		h m s	' " "	' " "	' " "	' " "
41 16 23.5	S. 0.46	0.0035888	21 18 4.95	14 50.2	14 48.4	54 21.4	54 14.7
42 14 33.8	0.38	0.0036945	21 14 9.04	14 46.9	14 45.9	54 9.3	54 5.5
43 12 42.3	0.29	0.0037986	21 10 13.13	14 45.3	14 45.1	54 3.3	54 2.9
44 10 48.9	0.18	0.0039011	21 6 17.22	14 45.6	14 46.6	54 4.4	54 8.1
45 8 53.8	S. 0.07	0.0040021	21 2 21.31	14 48.2	14 50.3	54 13.9	54 21.9
46 6 56.7	N. 0.04	0.0041017	20 58 25.40	14 53.2	14 56.7	54 32.3	54 45.2
47 4 57.7	0.15	0.0041998	20 54 29.49	15 0.8	15 5.7	55 0.4	55 18.1
48 2 56.8	0.25	0.0042965	20 50 33.59	15 11.1	15 17.1	55 38.0	56 0.0
49 0 54.1	0.34	0.0043919	20 46 37.68	15 23.7	15 30.7	56 24.0	56 49.7
49 58 49.4	0.41	0.0044861	20 42 41.77	15 38.1	15 45.7	57 16.8	57 44.8
50 56 42.9	0.46	0.0045793	20 38 45.86	15 53.5	16 1.2	58 13.2	58 41.5
51 54 34.7	0.48	0.0046715	20 34 49.95	16 8.7	16 15.8	59 9.0	59 35.2
52 52 24.8	0.46	0.0047628	20 30 54.04	16 22.4	16 28.2	59 59.2	60 20.4
53 50 13.3	0.41	0.0048534	20 26 58.13	16 33.0	16 36.8	60 38.2	60 52.1
54 48 0.4	0.33	0.0049432	20 23 2.22	16 39.4	16 40.8	61 1.7	61 6.7
55 45 46.1	0.22	0.0050322	20 19 6.31	16 40.9	16 39.7	61 6.9	61 2.6
56 43 30.5	N. 0.08	0.0051204	20 15 10.40	16 37.3	16 33.9	60 54.0	60 41.3
57 41 13.8	S. 0.07	0.0052077	20 11 14.49	16 29.5	16 24.3	60 25.2	60 6.1
58 38 55.9	0.21	0.0052939	20 7 18.58	16 18.5	16 12.2	59 44.8	59 21.8
59 36 36.9	0.34	0.0053790	20 3 22.67	16 5.6	15 58.9	58 57.7	58 33.1
60 34 16.9	0.46	0.0054627	19 59 26.75	15 52.1	15 45.5	58 8.4	57 44.0
61 31 55.9	0.56	0.0055448	19 55 30.84	15 39.0	15 32.9	57 20.4	56 57.7
62 29 33.9	0.63	0.0056252	19 51 34.93	15 27.0	15 21.4	56 36.1	56 15.9
63 27 10.9	0.67	0.0057038	19 47 39.02	15 16.3	15 11.5	55 57.0	55 39.6
64 24 47.0	0.69	0.0057803	19 43 43.11	15 7.2	15 3.2	55 23.6	55 9.1
65 22 22.1	0.67	0.0058548	19 39 47.20	14 59.6	14 56.4	54 56.0	54 44.3
66 19 56.3	0.64	0.0059272	19 35 51.29	14 53.6	14 51.1	54 33.9	54 24.8
67 17 29.6	0.58	0.0059973	19 31 55.38	14 49.0	14 47.2	54 17.1	54 10.6
68 15 1.8	0.50	0.0060653	19 27 59.47	14 45.8	14 44.7	54 5.3	54 1.3
69 12 33.0	0.40	0.0061310	19 24 3.56	14 44.0	14 43.6	53 58.7	53 57.3
70 10 3.2	0.30	0.0061943	19 20 7.65	14 43.6	14 44.1	53 57.4	53 59.0
71 7 32.3	S. 0.19	0.0062553	19 16 11.73	14 44.9	14 46.2	54 2.1	54 6.9

MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S							
	Longitude.		Latitude.		Age.	Meridian Passage.		
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.	
1	57° 1' 53".4	63° 1' 9".5	S. 3° 42' 10".3	S. 3° 19' 18".0	d 1.4	h m 1 6.1	h m 13 28.9	
2	68 58 33.0	74 54 21.7	2 54 19.3	2 27 30.9	2.4	1 52.1	14 15.6	
3	80 48 55.7	86 42 38.8	1 59 10.0	1 29 33.7	3.4	2 39.4	15 3.5	
4	92 35 57.3	98 29 20.9	S. 0° 58' 59".4	S. 0° 27' 44".4	4.4	3 27.8	15 52.3	
5	104 23 21.5	110 18 33.7	N. 0° 3' 53".6	N. 0° 35' 37".2	5.4	4 16.8	16 41.4	
6	116 15 34.0	122 15 0.5	1 7 8.6	1 38 9.4	6.4	5 5.9	17 30.4	
7	128 17 32.6	134 23 49.8	2 8 21.0	2 37 23.8	7.4	5 54.7	18 18.9	
8	140 34 31.3	146 50 15.1	3 4 57.5	3 30 40.7	8.4	6 43.0	19 6.9	
9	153 11 36.9	159 39 8.9	3 54 11.4	4 15 6.4	9.4	7 30.8	19 54.7	
10	166 13 18.1	172 54 25.1	4 33 1.9	4 47 34.4	10.4	8 18.6	20 42.6	
11	179 42 43.3	186 38 15.7	4 58 20.3	5 4 57.7	11.4	9 6.9	21 31.5	
12	193 40 55.3	200 50 23.3	5 7 7.2	5 4 32.9	12.4	9 56.6	22 22.4	
13	208 6 8.8	215 27 29.3	4 57 4.0	4 44 36.2	13.4	10 48.7	23 15.9	
14	222 53 31.4	230 23 12.6	4 27 12.9	4 5 5.4	14.4	11 44.0	* *	
15	237 55 23.8	245 28 52.0	3 38 33.5	3 8 5.5	15.4	12 42.7	0 12.9	
16	253 2 24.0	260 34 48.5	2 34 16.8	1 57 48.3	16.4	13 44.4	1 13.3	
17	268 4 59.9	275 32 0.0	1 19 24.8	N. 0° 39' 53".3	17.4	14 47.5	2 15.9	
18	282 54 59.8	290 13 20.4	N. 0° 0' 0".1	S. 0° 39' 29".9	18.4	15 49.9	3 19.0	
19	297 26 33.1	304 34 18.8	S. 1° 17' 55".8	1 54 40.5	19.4	16 49.4	4 20.1	
20	311 36 27.7	318 32 57.6	2 29 11.8	3 1 2.7	20.4	17 45.0	5 17.8	
21	325 23 52.7	332 9 22.8	3 29 51.4	3 55 20.3	21.4	18 36.4	6 11.2	
22	338 49 41.1	345 25 3.8	4 17 16.4	4 35 30.6	22.4	19 24.3	7 0.8	
23	351 55 48.9	358 22 14.9	4 49 57.1	5 0 33.1	23.4	20 9.6	7 47.2	
24	4 44 40.8	11 3 25.3	5 7 18.0	5 10 14.4	24.4	20 53.2	8 31.5	
25	17 18 46.1	23 31 0.2	5 9 26.2	5 4 59.4	25.4	21 36.2	9 14.8	
26	29 40 23.2	35 47 10.3	4 57 2.0	4 45 43.3	26.4	22 19.4	9 57.8	
27	41 51 35.3	47 53 51.6	4 31 14.3	4 13 47.2	27.4	23 3.5	10 41.3	
28	53 54 12.1	59 52 49.7	3 53 35.6	3 30 54.1	28.4	23 48.8	11 26.0	
29	65 49 57.4	71 45 48.3	3 5 58.3	2 39 5.3	29.4	* *	12 12.1	
30	77 40 37.3	83 34 39.9	2 10 31.7	1 40 35.5	0.8	0 35.7	12 59.5	
31	89 28 13.2	95 21 35.5	1 9 35.1	S. 0° 37' 48".7	1.8	1 23.7	13 48.1	
32	101 15 7.6	107 9 11.8	S. 0° 5' 35".2	N. 0° 26' 46".5	2.8	2 12.6	14 37.2	

The Moon's Longitude and Latitude are from HANSEN'S Tables *direct*; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 1.					FRIDAY 3.				
0	3 42 28.35	19'953	N.15 53 56.6	85'11	0	5 20 35.28	20'913	N.21 9 9.4	44'23
1	3 44 28.12	19'973	16 22 5.1	84'39	1	5 22 40.81	20'930	21 13 31.9	43'26
2	3 46 28.02	19'993	16 10 49.3	83'67	2	5 24 46.44	20'947	21 17 48.5	42'28
3	3 48 28.03	20'012	16 19 9.2	82'94	3	5 26 52.17	20'963	21 21 59.3	41'31
4	3 50 28.16	20'032	16 27 24.6	82'19	4	5 28 58.00	20'981	21 26 4.2	40'33
5	3 52 28.41	20'053	16 35 35.5	81'44	5	5 31 3.94	20'998	21 30 3.2	39'34
6	3 54 28.79	20'073	16 43 41.9	80'70	6	5 33 9.97	21'013	21 33 56.3	38'36
7	3 56 29.29	20'093	16 51 43.9	79'94	7	5 35 16.10	21'030	21 37 43.5	37'37
8	3 58 29.90	20'113	16 59 41.2	79'17	8	5 37 22.33	21'047	21 41 24.7	36'38
9	4 0 30.64	20'134	17 7 33.9	78'40	9	5 39 28.66	21'063	21 45 0.0	35'38
10	4 2 31.51	20'155	17 15 22.0	77'63	10	5 41 35.08	21'078	21 48 29.2	34'37
11	4 4 32.50	20'175	17 23 5.4	76'84	11	5 43 41.59	21'092	21 51 52.4	33'37
12	4 6 33.61	20'196	17 30 44.1	76'06	12	5 45 48.18	21'107	21 55 9.6	32'36
13	4 8 34.85	20'217	17 38 18.1	75'27	13	5 47 54.87	21'122	21 58 20.7	31'35
14	4 10 36.21	20'237	17 45 47.3	74'47	14	5 50 1.64	21'136	22 1 25.8	30'34
15	4 12 37.69	20'258	17 53 11.7	73'66	15	5 52 8.50	21'151	22 4 24.8	29'33
16	4 14 39.30	20'278	18 0 31.2	72'85	16	5 54 15.45	21'164	22 7 17.7	28'30
17	4 16 41.03	20'299	18 7 45.9	72'03	17	5 56 22.47	21'178	22 10 4.4	27'28
18	4 18 42.89	20'321	18 14 55.6	71'21	18	5 58 29.58	21'191	22 12 45.0	26'26
19	4 20 44.88	20'342	18 22 0.4	70'38	19	6 0 36.76	21'203	22 15 19.5	25'23
20	4 22 46.99	20'362	18 29 0.2	69'55	20	6 2 44.02	21'217	22 17 47.8	24'20
21	4 24 49.22	20'383	18 35 55.0	68'72	21	6 4 51.36	21'228	22 20 9.9	23'17
22	4 26 51.58	20'403	18 42 44.8	67'88	22	6 6 58.76	21'240	22 22 25.8	22'13
23	4 28 54.06	20'424	N.18 49 29.5	67'02	23	6 9 6.24	21'253	N.22 24 35.5	21'09
THURSDAY 2.					SATURDAY 4.				
0	4 30 56.67	20'445	N.18 56 9.0	66'16	0	6 11 13.79	21'264	N.22 26 38.9	20'05
1	4 32 59.40	20'466	19 2 43.4	65'31	1	6 13 21.41	21'275	22 28 36.1	19'01
2	4 35 2.26	20'487	19 9 12.7	64'45	2	6 15 29.09	21'285	22 30 27.0	17'97
3	4 37 5.24	20'507	19 15 36.8	63'58	3	6 17 36.83	21'295	22 32 11.7	16'93
4	4 39 8.34	20'528	19 21 55.6	62'70	4	6 19 44.63	21'305	22 33 50.1	15'88
5	4 41 11.57	20'548	19 28 9.2	61'83	5	6 21 52.49	21'315	22 35 22.2	14'83
6	4 43 14.91	20'568	19 34 17.5	60'94	6	6 24 0.41	21'325	22 36 48.0	13'78
7	4 45 18.38	20'588	19 40 20.5	60'05	7	6 26 8.39	21'334	22 38 7.5	12'73
8	4 47 21.97	20'608	19 46 18.1	59'16	8	6 28 16.42	21'343	22 39 20.7	11'67
9	4 49 25.68	20'628	19 52 10.4	58'26	9	6 30 24.50	21'351	22 40 27.5	10'61
10	4 51 29.51	20'648	19 57 57.2	57'35	10	6 32 32.63	21'359	22 41 28.0	9'55
11	4 53 33.46	20'668	20 3 38.6	56'44	11	6 34 40.81	21'367	22 42 22.1	8'49
12	4 55 37.53	20'688	20 9 14.5	55'53	12	6 36 49.03	21'374	22 43 9.9	7'43
13	4 57 41.72	20'708	20 14 44.9	54'61	13	6 38 57.30	21'382	22 43 51.3	6'37
14	4 59 46.02	20'727	20 20 9.8	53'69	14	6 41 5.61	21'388	22 44 26.3	5'30
15	5 1 50.44	20'746	20 25 29.2	52'77	15	6 43 13.95	21'394	22 44 54.9	4'24
16	5 3 54.97	20'765	20 30 43.0	51'83	16	6 45 22.34	21'401	22 45 17.2	3'18
17	5 5 59.62	20'784	20 35 51.2	50'89	17	6 47 30.76	21'407	22 45 33.0	2'10
18	5 8 4.38	20'803	20 40 53.7	49'95	18	6 49 39.21	21'412	22 45 48.4	1'03
19	5 10 9.26	20'822	20 45 50.6	49'01	19	6 51 47.70	21'418	22 45 45.4	0'03
20	5 12 14.24	20'840	20 50 41.8	48'06	20	6 53 56.22	21'422	22 45 42.0	1'10
21	5 14 19.34	20'859	20 55 27.3	47'11	21	6 56 4.76	21'425	22 45 32.2	2'17
22	5 16 24.55	20'877	21 0 7.1	46'16	22	6 58 13.32	21'429	22 45 16.0	3'24
23	5 18 29.86	20'894	21 4 41.2	45'19	23	7 0 21.91	21'433	22 44 53.3	4'32
24	5 20 35.28	20'913	N.21 9 9.4	44'23	24	7 2 30.52	21'437	N.22 44 24.2	5'38

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 5.					TUESDAY 7.				
0	7 23 0 ^h 52 ^m 21 ^s 437		N.22 44 24 [°] 2'	5 ^h 38	0	8 45 12 ^h 91 ^m 21 ^s 264		N.20 16 4 [°] 4'	55 ^h 89
1	7 43 9 ^h 15 ^m 21 ^s 439		22 43 48 [°] 7'	6 ^h 46	1	8 47 20 ^h 47 ^m 21 ^s 255		20 10 26 [°] 0'	56 ^h 90
2	7 64 7 ^h 79 ^m 21 ^s 442		22 43 6 [°] 7'	7 ^h 53	2	8 49 27 ^h 97 ^m 21 ^s 246		20 4 41 [°] 6'	57 ^h 90
3	7 85 6 ^h 45 ^m 21 ^s 445		22 42 18 [°] 3'	8 ^h 60	3	8 51 35 ^h 42 ^m 21 ^s 238		19 58 51 [°] 2'	58 ^h 89
4	7 11 5 ^h 13 ^m 21 ^s 447		22 41 23 [°] 5'	9 ^h 68	4	8 53 42 ^h 82 ^m 21 ^s 229		19 52 54 [°] 9'	59 ^h 89
5	7 13 13 ^h 81 ^m 21 ^s 448		22 40 22 [°] 2'	10 ^h 75	5	8 55 50 ^h 17 ^m 21 ^s 220		19 46 52 [°] 5'	60 ^h 89
6	7 15 22 ^h 50 ^m 21 ^s 449		22 39 14 [°] 5'	11 ^h 82	6	8 57 57 ^h 46 ^m 21 ^s 211		19 40 44 [°] 2'	61 ^h 88
7	7 17 31 ^h 20 ^m 21 ^s 451		22 38 0 [°] 4'	12 ^h 89	7	9 0 4 ^h 70 ^m 21 ^s 203		19 34 30 [°] 0'	62 ^h 86
8	7 19 39 ^h 91 ^m 21 ^s 452		22 36 39 [°] 8'	13 ^h 97	8	9 2 11 ^h 89 ^m 21 ^s 194		19 28 9 [°] 9'	63 ^h 83
9	7 21 48 ^h 62 ^m 21 ^s 452		22 35 12 [°] 8'	15 ^h 03	9	9 4 19 ^h 03 ^m 21 ^s 185		19 21 44 [°] 0'	64 ^h 82
10	7 23 57 ^h 33 ^m 21 ^s 452		22 33 39 [°] 4'	16 ^h 11	10	9 6 26 ^h 11 ^m 21 ^s 176		19 15 12 [°] 1'	65 ^h 79
11	7 26 6 ^h 04 ^m 21 ^s 451		22 31 59 [°] 5'	17 ^h 18	11	9 8 33 ^h 14 ^m 21 ^s 167		19 8 34 [°] 5'	66 ^h 76
12	7 28 14 ^h 74 ^m 21 ^s 450		22 30 13 [°] 3'	18 ^h 24	12	9 10 40 ^h 11 ^m 21 ^s 158		19 1 51 [°] 0'	67 ^h 73
13	7 30 23 ^h 44 ^m 21 ^s 450		22 28 20 [°] 6'	19 ^h 32	13	9 12 47 ^h 03 ^m 21 ^s 149		18 55 1 [°] 7'	68 ^h 69
14	7 32 32 ^h 14 ^m 21 ^s 449		22 26 21 [°] 5'	20 ^h 39	14	9 14 53 ^h 90 ^m 21 ^s 140		18 48 6 [°] 7'	69 ^h 66
15	7 34 40 ^h 83 ^m 21 ^s 448		22 24 15 [°] 9'	21 ^h 46	15	9 17 0 ^h 71 ^m 21 ^s 131		18 41 5 [°] 8'	70 ^h 62
16	7 36 49 ^h 51 ^m 21 ^s 445		22 22 4 [°] 0'	22 ^h 53	16	9 19 7 ^h 47 ^m 21 ^s 122		18 33 59 [°] 3'	71 ^h 56
17	7 38 58 ^h 17 ^m 21 ^s 443		22 19 45 [°] 6'	23 ^h 59	17	9 21 14 ^h 17 ^m 21 ^s 113		18 26 47 [°] 1'	72 ^h 52
18	7 41 6 ^h 83 ^m 21 ^s 442		22 17 20 [°] 9'	24 ^h 66	18	9 23 20 ^h 82 ^m 21 ^s 104		18 19 29 [°] 1'	73 ^h 47
19	7 43 15 ^h 47 ^m 21 ^s 438		22 14 49 [°] 7'	25 ^h 73	19	9 25 27 ^h 42 ^m 21 ^s 096		18 12 5 [°] 5'	74 ^h 40
20	7 45 24 ^h 09 ^m 21 ^s 435		22 12 12 [°] 1'	26 ^h 79	20	9 27 33 ^h 97 ^m 21 ^s 087		18 4 36 [°] 3'	75 ^h 33
21	7 47 32 ^h 69 ^m 21 ^s 433		22 9 28 [°] 2'	27 ^h 85	21	9 29 40 ^h 46 ^m 21 ^s 078		17 57 1 [°] 5'	76 ^h 27
22	7 49 41 ^h 28 ^m 21 ^s 429		22 6 37 [°] 9'	28 ^h 92	22	9 31 46 ^h 90 ^m 21 ^s 069		17 49 21 [°] 1'	77 ^h 20
23	7 51 49 ^h 84 ^m 21 ^s 425		N.22 3 41 [°] 2'	29 ^h 98	23	9 33 53 ^h 29 ^m 21 ^s 060		N.17 41 35 [°] 1'	78 ^h 13
MONDAY 6.					WEDNESDAY 8.				
0	7 53 58 ^h 38 ^m 21 ^s 422		N.22 0 38 [°] 2'	31 ^h 03	0	9 35 59 ^h 62 ^m 21 ^s 052		N.17 33 43 [°] 6'	79 ^h 04
1	7 56 6 ^h 90 ^m 21 ^s 418		21 57 28 [°] 8'	32 ^h 09	1	9 38 5 ^h 91 ^m 21 ^s 044		17 25 46 [°] 6'	79 ^h 96
2	7 58 15 ^h 39 ^m 21 ^s 413		21 54 13 [°] 1'	33 ^h 15	2	9 40 12 ^h 15 ^m 21 ^s 036		17 17 44 [°] 1'	80 ^h 88
3	8 0 23 ^h 85 ^m 21 ^s 408		21 50 51 [°] 0'	34 ^h 21	3	9 42 18 ^h 34 ^m 21 ^s 028		17 9 36 [°] 1'	81 ^h 78
4	8 2 32 ^h 28 ^m 21 ^s 403		21 47 20 [°] 6'	35 ^h 26	4	9 44 24 ^h 48 ^m 21 ^s 019		17 1 22 [°] 7'	82 ^h 68
5	8 4 40 ^h 68 ^m 21 ^s 398		21 43 47 [°] 9'	36 ^h 31	5	9 46 30 ^h 57 ^m 21 ^s 011		16 53 3 [°] 9'	83 ^h 58
6	8 6 49 ^h 05 ^m 21 ^s 393		21 40 6 [°] 9'	37 ^h 37	6	9 48 36 ^h 61 ^m 21 ^s 003		16 44 39 [°] 7'	84 ^h 48
7	8 8 57 ^h 39 ^m 21 ^s 387		21 36 19 [°] 5'	38 ^h 42	7	9 50 42 ^h 61 ^m 20 ^s 997		16 36 10 [°] 2'	85 ^h 36
8	8 11 5 ^h 69 ^m 21 ^s 380		21 32 25 [°] 9'	39 ^h 46	8	9 52 48 ^h 57 ^m 20 ^s 989		16 27 35 [°] 4'	86 ^h 25
9	8 13 13 ^h 95 ^m 21 ^s 374		21 28 26 [°] 0'	40 ^h 50	9	9 54 54 ^h 48 ^m 20 ^s 982		16 18 55 [°] 2'	87 ^h 13
10	8 15 22 ^h 18 ^m 21 ^s 368		21 24 19 [°] 9'	41 ^h 53	10	9 57 0 ^h 35 ^m 20 ^s 974		16 10 9 [°] 8'	88 ^h 00
11	8 17 30 ^h 37 ^m 21 ^s 362		21 20 7 [°] 6'	42 ^h 58	11	9 59 6 ^h 17 ^m 20 ^s 967		16 1 19 [°] 2'	88 ^h 87
12	8 19 38 ^h 52 ^m 21 ^s 355		21 15 49 [°] 0'	43 ^h 62	12	10 1 11 ^h 95 ^m 20 ^s 960		15 52 23 [°] 4'	89 ^h 73
13	8 21 46 ^h 63 ^m 21 ^s 348		21 11 24 [°] 2'	44 ^h 66	13	10 3 17 ^h 69 ^m 20 ^s 954		15 43 22 [°] 4'	90 ^h 59
14	8 23 54 ^h 70 ^m 21 ^s 342		21 6 53 [°] 1'	45 ^h 69	14	10 5 23 ^h 40 ^m 20 ^s 948		15 34 16 [°] 3'	91 ^h 44
15	8 26 2 ^h 73 ^m 21 ^s 334		21 2 15 [°] 9'	46 ^h 72	15	10 7 29 ^h 07 ^m 20 ^s 942		15 25 5 [°] 1'	92 ^h 29
16	8 28 10 ^h 71 ^m 21 ^s 327		20 57 32 [°] 5'	47 ^h 75	16	10 9 34 ^h 70 ^m 20 ^s 935		15 15 48 [°] 8'	93 ^h 14
17	8 30 18 ^h 65 ^m 21 ^s 319		20 52 42 [°] 9'	48 ^h 78	17	10 11 40 ^h 29 ^m 20 ^s 930		15 6 27 [°] 4'	93 ^h 98
18	8 32 26 ^h 54 ^m 21 ^s 312		20 47 47 [°] 1'	49 ^h 81	18	10 13 45 ^h 86 ^m 20 ^s 925		14 57 1 [°] 0'	94 ^h 81
19	8 34 34 ^h 39 ^m 21 ^s 304		20 42 45 [°] 2'	50 ^h 82	19	10 15 51 ^h 39 ^m 20 ^s 919		14 47 29 [°] 7'	95 ^h 64
20	8 36 42 ^h 19 ^m 21 ^s 296		20 37 37 [°] 3'	51 ^h 83	20	10 17 56 ^h 89 ^m 20 ^s 914		14 37 53 [°] 3'	96 ^h 47
21	8 38 49 ^h 94 ^m 21 ^s 288		20 32 23 [°] 2'	52 ^h 86	21	10 20 2 ^h 36 ^m 20 ^s 909		14 28 12 [°] 1'	97 ^h 28
22	8 40 57 ^h 65 ^m 21 ^s 280		20 27 3 [°] 0'	53 ^h 88	22	10 22 7 ^h 80 ^m 20 ^s 905		14 18 26 [°] 0'	98 ^h 09
23	8 43 5 ^h 30 ^m 21 ^s 272		20 21 36 [°] 7'	54 ^h 88	23	10 24 13 ^h 22 ^m 20 ^s 901		14 8 35 [°] 0'	98 ^h 90
24	8 45 12 ^h 91 ^m 21 ^s 264		N.20 16 4 [°] 4'	55 ^h 89	24	10 26 18 ^h 61 ^m 20 ^s 897		N.13 58 39 [°] 2'	99 ^h 69

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 9.					SATURDAY 11.			
m	s	° ' "	"		h	m	s	"
26 18.61	20.897	N. 13 58 39.2	99.69	0	12 6 51.53	21.167	N. 4 40 37.2	129.87
28 23.98	20.893	13 48 38.7	100.48	1	12 8 58.58	21.184	4 27 36.7	130.29
30 29.33	20.891	13 38 33.4	101.28	2	12 11 5.74	21.203	4 14 33.7	130.70
32 34.67	20.888	13 28 23.4	102.06	3	12 13 13.01	21.221	4 1 28.3	131.10
34 39.98	20.884	13 18 8.7	102.83	4	12 15 20.39	21.239	3 48 20.5	131.49
36 45.28	20.882	13 7 49.4	103.60	5	12 17 27.88	21.259	3 35 10.4	131.87
38 50.57	20.880	12 57 25.5	104.37	6	12 19 35.50	21.280	3 21 58.1	132.23
40 55.84	20.878	12 46 57.0	105.13	7	12 21 43.24	21.300	3 8 43.6	132.60
43 1.11	20.878	12 36 23.9	105.88	8	12 23 51.10	21.321	2 55 26.9	132.95
45 6.37	20.876	12 25 46.4	106.62	9	12 25 59.09	21.343	2 42 8.2	133.28
47 11.62	20.875	12 15 4.5	107.36	10	12 28 7.22	21.367	2 28 47.5	133.61
49 16.87	20.875	12 4 18.1	108.10	11	12 30 15.49	21.389	2 15 24.9	133.92
51 22.12	20.875	11 53 27.3	108.83	12	12 32 23.89	21.413	2 2 0.5	134.22
53 27.37	20.875	11 42 32.2	109.54	13	12 34 32.44	21.438	1 48 34.3	134.51
55 32.62	20.876	11 31 32.8	110.25	14	12 36 41.14	21.462	1 35 6.4	134.79
57 37.88	20.878	11 20 29.2	110.96	15	12 38 49.98	21.487	1 21 36.8	135.06
59 43.15	20.878	11 9 21.3	111.66	16	12 40 58.98	21.513	1 8 5.7	135.32
1 148.42	20.880	10 58 9.3	112.35	17	12 43 8.14	21.540	0 54 33.0	135.56
3 353.71	20.883	10 46 53.1	113.03	18	12 45 17.46	21.568	0 40 59.0	135.78
5 59.02	20.886	10 35 32.9	113.71	19	12 47 26.95	21.596	0 27 23.6	136.01
8 4.34	20.888	10 24 8.6	114.38	20	12 49 36.61	21.623	0 13 46.9	136.22
10 9.68	20.892	10 12 40.3	115.05	21	12 51 46.43	21.652	N. 0 0 9.0	136.41
12 15.04	20.896	10 1 8.0	115.71	22	12 53 56.44	21.683	S. 0 13 30.0	136.58
14 20.43	20.900	N. 9 49 31.8	116.36	23	12 56 6.62	21.712	S. 0 27 10.0	136.75
FRIDAY 10.					SUNDAY 12.			
m	s	° ' "	"		h	m	s	"
16 25.84	20.905	N. 9 37 51.7	117.00	0	12 58 16.98	21.743	S. 0 40 51.0	136.91
18 31.29	20.911	9 26 7.8	117.63	1	13 0 27.53	21.774	0 54 32.9	137.05
20 36.77	20.916	9 14 20.2	118.24	2	13 2 38.27	21.806	1 8 15.6	137.18
22 42.28	20.923	9 2 28.9	118.87	3	13 4 49.20	21.838	1 21 59.1	137.30
24 47.84	20.929	8 50 33.8	119.48	4	13 7 0.33	21.872	1 35 43.2	137.40
26 53.43	20.936	8 38 35.2	120.08	5	13 9 11.66	21.905	1 49 27.9	137.48
28 59.07	20.944	8 26 32.9	120.68	6	13 11 23.19	21.939	2 3 13.0	137.56
31 4.76	20.953	8 14 27.1	121.26	7	13 13 34.93	21.974	2 16 58.6	137.63
33 10.50	20.961	8 2 17.8	121.83	8	13 15 46.88	22.009	2 30 44.5	137.67
35 16.29	20.969	7 50 5.1	122.40	9	13 17 59.04	22.045	2 44 30.6	137.70
37 22.13	20.979	7 37 49.0	122.97	10	13 20 11.42	22.082	2 58 16.9	137.72
39 28.04	20.989	7 25 29.5	123.52	11	13 22 24.02	22.119	3 12 3.2	137.72
41 34.00	20.999	7 13 6.8	124.06	12	13 24 36.85	22.157	3 25 49.5	137.71
43 40.03	21.011	7 0 40.8	124.59	13	13 26 49.91	22.195	3 39 35.7	137.68
45 46.13	21.023	6 48 11.7	125.12	14	13 29 3.19	22.233	3 53 21.7	137.64
47 52.30	21.034	6 35 39.4	125.64	15	13 31 16.71	22.273	4 7 7.4	137.58
49 58.54	21.047	6 23 4.0	126.15	16	13 33 30.47	22.313	4 20 52.7	137.52
52 4.86	21.060	6 10 25.6	126.64	17	13 35 44.47	22.354	4 34 37.6	137.43
54 11.26	21.074	5 57 44.3	127.13	18	13 37 58.72	22.395	4 48 21.9	137.33
56 17.75	21.088	5 45 0.1	127.61	19	13 40 13.21	22.436	5 2 5.5	137.21
58 24.32	21.103	5 32 13.0	128.08	20	13 42 27.95	22.478	5 15 48.4	137.08
0 30.98	21.118	5 19 23.1	128.55	21	13 44 42.95	22.521	5 29 30.4	136.93
2 37.73	21.133	5 6 30.4	129.00	22	13 46 58.20	22.564	5 43 11.5	136.76
4 44.58	21.150	4 53 35.1	129.43	23	13 49 13.72	22.608	5 56 51.5	136.58
6 51.53	21.167	N. 4 40 37.2	129.87	24	13 51 29.49	22.652	S. 6 10 30.4	136.38

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 13.					WEDNESDAY 15.				
0	13 51 49.49	22.652	S. 6 10 30.4	136.38	0	15 46 1.38	25.145	S. 16 9 19.9	106.15
1	13 53 45.54	22.697	6 24 8.1	136.17	1	15 48 32.41	25.198	16 19 53.6	105.08
2	13 56 1.85	22.742	6 37 44.4	135.93	2	15 51 3.76	25.251	16 30 20.8	103.98
3	13 58 18.44	22.788	6 51 19.3	135.69	3	15 53 35.42	25.303	16 40 41.4	102.87
4	14 0 35.30	22.833	7 4 52.7	135.43	4	15 56 7.39	25.355	16 50 55.3	101.74
5	14 2 52.44	22.880	7 18 24.5	135.15	5	15 58 39.68	25.407	17 1 2.3	100.58
6	14 5 9.86	22.927	7 31 54.5	134.85	6	16 1 12.27	25.458	17 11 2.3	99.43
7	14 7 27.56	22.975	7 45 22.7	134.54	7	16 3 45.17	25.508	17 20 55.4	98.25
8	14 9 45.56	23.023	7 58 49.0	134.21	8	16 6 18.37	25.558	17 30 41.3	97.04
9	14 12 3.84	23.071	8 12 13.2	133.86	9	16 8 51.87	25.608	17 40 19.9	95.83
10	14 14 22.41	23.119	8 25 35.3	133.50	10	16 11 25.66	25.657	17 49 51.2	94.60
11	14 16 41.27	23.168	8 38 55.2	133.11	11	16 13 59.75	25.706	17 59 15.1	93.35
12	14 19 0.43	23.218	8 52 12.6	132.70	12	16 16 34.13	25.753	18 8 31.4	92.08
13	14 21 19.89	23.268	9 5 27.6	132.29	13	16 19 8.79	25.801	18 17 40.1	90.81
14	14 23 39.65	23.319	9 18 40.1	131.86	14	16 21 43.74	25.848	18 26 41.1	89.51
15	14 25 59.72	23.370	9 31 49.9	131.40	15	16 24 18.96	25.893	18 35 34.2	88.20
16	14 28 20.09	23.420	9 44 56.9	130.93	16	16 26 54.46	25.939	18 44 19.5	86.88
17	14 30 40.76	23.472	9 58 1.1	130.44	17	16 29 30.23	25.984	18 52 56.7	85.53
18	14 33 1.75	23.524	10 11 2.2	129.93	18	16 32 6.27	26.028	19 1 25.8	84.17
19	14 35 23.05	23.577	10 24 0.3	129.41	19	16 34 42.56	26.070	19 9 46.7	82.80
20	14 37 44.67	23.629	10 36 55.1	128.87	20	16 37 19.11	26.113	19 17 59.4	81.42
21	14 40 6.60	23.681	10 49 46.7	128.31	21	16 39 55.91	26.154	19 26 3.7	80.02
22	14 42 28.84	23.733	11 2 34.8	127.72	22	16 42 32.96	26.195	19 33 59.6	78.60
23	14 44 51.40	23.787	S. 11 15 19.3	127.12	23	16 45 10.25	26.234	S. 19 41 46.9	77.17
TUESDAY 14.					THURSDAY 16.				
0	14 47 14.29	23.841	S. 11 28 0.2	126.51	0	16 47 47.77	26.273	S. 19 49 25.6	75.73
1	14 49 37.49	23.894	11 40 37.4	125.88	1	16 50 25.52	26.311	19 56 55.6	74.28
2	14 52 1.02	23.948	11 53 10.7	125.22	2	16 53 3.50	26.348	20 4 16.9	72.82
3	14 54 24.87	24.003	12 5 40.0	124.55	3	16 55 41.70	26.383	20 11 29.4	71.33
4	14 56 49.05	24.057	12 18 5.3	123.86	4	16 58 20.10	26.418	20 18 32.9	69.83
5	14 59 13.55	24.111	12 30 26.3	123.14	5	17 0 58.71	26.452	20 25 27.4	68.33
6	15 1 38.38	24.166	12 42 43.0	122.42	6	17 3 37.52	26.485	20 32 12.9	66.82
7	15 4 3.54	24.220	12 54 55.3	121.68	7	17 6 16.53	26.517	20 38 49.2	65.28
8	15 6 29.02	24.274	13 7 3.1	120.91	8	17 8 55.72	26.547	20 45 16.3	63.75
9	15 8 54.83	24.329	13 19 6.2	120.13	9	17 11 35.09	26.576	20 51 34.2	62.21
10	15 11 20.97	24.384	13 31 4.6	119.33	10	17 14 14.63	26.604	20 57 42.8	60.65
11	15 13 47.44	24.439	13 42 58.1	118.50	11	17 16 54.34	26.631	21 3 42.0	59.08
12	15 16 14.24	24.494	13 54 46.6	117.66	12	17 19 34.20	26.657	21 9 31.7	57.50
13	15 18 41.37	24.549	14 6 30.0	116.81	13	17 22 14.22	26.682	21 15 12.0	55.92
14	15 21 8.83	24.603	14 18 8.3	115.93	14	17 24 54.38	26.705	21 20 42.7	54.32
15	15 23 36.61	24.658	14 29 41.2	115.03	15	17 27 34.68	26.727	21 26 3.8	52.71
16	15 26 4.73	24.714	14 41 8.7	114.12	16	17 30 15.10	26.748	21 31 15.2	51.10
17	15 28 33.17	24.768	14 52 30.6	113.18	17	17 32 55.65	26.768	21 36 17.0	49.48
18	15 31 1.94	24.823	15 3 46.9	112.23	18	17 35 36.31	26.785	21 41 9.0	47.85
19	15 33 31.04	24.877	15 14 57.4	111.27	19	17 38 17.07	26.802	21 45 51.2	46.22
20	15 36 0.46	24.931	15 26 2.1	110.28	20	17 40 57.93	26.818	21 50 23.6	44.58
21	15 38 30.21	24.985	15 37 0.8	109.28	21	17 43 38.88	26.832	21 54 46.2	42.93
22	15 41 0.28	25.038	15 47 53.4	108.25	22	17 46 19.91	26.845	21 58 58.8	41.28
23	15 43 30.67	25.092	15 58 39.8	107.21	23	17 49 1.02	26.857	22 3 1.5	39.62
24	15 46 1.38	25.145	S. 16 9 19.9	106.15	24	17 51 42.19	26.867	S. 22 6 54.2	37.95

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 17.					SUNDAY 19.				
0	17 51 42.19	26.867	S. 22 6 54.2	37.95	0	19 59 7.51	25.719	S. 21 57 28.1	40.13
1	17 54 23.42	26.875	22 10 36.9	36.28	1	20 1 41.67	25.667	21 53 22.9	41.59
2	17 57 4.69	26.882	22 14 9.6	34.62	2	20 4 15.51	25.613	21 49 9.0	43.03
3	17 59 46.00	26.888	22 17 32.3	32.94	3	20 6 49.03	25.559	21 44 46.6	44.45
4	18 2 27.34	26.893	22 20 44.9	31.26	4	20 9 22.22	25.504	21 40 15.6	45.87
5	18 5 8.71	26.896	22 23 47.4	29.58	5	20 11 55.08	25.448	21 35 36.2	47.26
6	18 7 50.09	26.897	22 26 39.8	27.89	6	20 14 27.59	25.390	21 30 48.5	48.65
7	18 10 31.47	26.896	22 29 22.1	26.21	7	20 16 59.76	25.333	21 25 52.4	50.03
8	18 13 12.84	26.895	22 31 54.3	24.53	8	20 19 31.59	25.276	21 20 48.1	51.39
9	18 15 54.21	26.893	22 34 16.4	22.83	9	20 22 3.07	25.217	21 15 35.7	52.74
10	18 18 35.55	26.888	22 36 28.3	21.13	10	20 24 34.19	25.157	21 10 15.2	54.08
11	18 21 16.86	26.882	22 38 30.0	19.44	11	20 27 4.95	25.097	21 4.46.7	55.41
12	18 23 58.13	26.874	22 40 21.6	17.75	12	20 29 35.35	25.037	20 59 10.3	56.72
13	18 26 39.35	26.866	22 42 3.0	16.06	13	20 32 5.39	24.976	20 53 26.1	58.02
14	18 29 20.52	26.856	22 43 34.3	14.38	14	20 34 35.06	24.914	20 47 34.1	59.31
15	18 32 1.62	26.844	22 44 55.5	12.68	15	20 37 4.36	24.853	20 41 34.4	60.58
16	18 34 42.65	26.831	22 46 6.5	10.99	16	20 39 33.29	24.791	20 35 27.2	61.83
17	18 37 23.59	26.816	22 47 7.4	9.31	17	20 42 1.85	24.728	20 29 12.4	63.08
18	18 40 4.44	26.800	22 47 58.2	7.63	18	20 44 30.02	24.663	20 22 50.3	64.30
19	18 42 45.19	26.783	22 48 38.9	5.94	19	20 46 57.81	24.600	20 16 20.8	65.53
20	18 45 25.83	26.764	22 49 9.5	4.27	20	20 49 25.22	24.537	20 9 44.0	66.73
21	18 48 6.36	26.744	22 49 30.1	2.59	21	20 51 52.25	24.473	20 3 0.1	67.91
22	18 50 46.76	26.723	22 49 40.6	0.92	22	20 54 18.89	24.408	19 56 9.1	69.08
23	18 53 27.03	26.700	S. 22 49 41.1	0.75	23	20 56 45.15	24.343	S. 19 49 11.1	70.25
SATURDAY 18.					MONDAY 20.				
0	18 56 7.16	26.675	S. 22 49 31.6	2.42	0	20 59 11.01	24.278	S. 19 42 6.1	71.39
1	18 58 47.13	26.649	22 49 12.1	4.08	1	21 1 36.48	24.213	19 34 54.4	72.52
2	19 1 26.95	26.623	22 48 42.7	5.73	2	21 4 1.56	24.147	19 27 35.9	73.64
3	19 4 6.60	26.593	22 48 3.4	7.37	3	21 6 26.24	24.081	19 20 10.7	74.74
4	19 6 46.07	26.563	22 47 14.3	9.01	4	21 8 50.53	24.016	19 12 39.0	75.83
5	19 9 25.36	26.533	22 46 15.3	10.65	5	21 11 14.43	23.951	19 5 0.8	76.90
6	19 12 4.47	26.501	22 45 6.5	12.28	6	21 13 37.94	23.885	18 57 16.2	77.96
7	19 14 43.37	26.466	22 43 48.0	13.90	7	21 16 1.05	23.818	18 49 25.3	79.00
8	19 17 22.06	26.432	22 42 19.7	15.52	8	21 18 23.76	23.753	18 41 28.2	80.03
9	19 20 0.55	26.396	22 40 41.8	17.13	9	21 20 46.08	23.687	18 33 24.9	81.06
10	19 22 38.81	26.358	22 38 54.2	18.73	10	21 23 8.00	23.620	18 25 15.5	82.06
11	19 25 16.85	26.319	22 36 57.1	20.31	11	21 25 29.52	23.554	18 17 0.2	83.04
12	19 27 54.64	26.279	22 34 50.5	21.89	12	21 27 50.65	23.489	18 8 39.0	84.02
13	19 30 32.20	26.239	22 32 34.4	23.47	13	21 30 11.39	23.423	18 0 12.0	84.98
14	19 33 9.51	26.197	22 30 8.8	25.04	14	21 32 31.73	23.357	17 51 39.3	85.93
15	19 35 46.56	26.153	22 27 33.9	26.59	15	21 34 51.67	23.292	17 43 0.9	86.86
16	19 38 23.35	26.109	22 24 49.7	28.14	16	21 37 11.23	23.227	17 34 17.0	87.77
17	19 40 59.87	26.064	22 21 56.2	29.68	17	21 39 30.39	23.161	17 25 27.7	88.67
18	19 43 36.12	26.018	22 18 53.5	31.21	18	21 41 49.16	23.096	17 16 33.0	89.57
19	19 46 12.09	25.971	22 15 41.7	32.72	19	21 44 7.54	23.031	17 7 32.9	90.44
20	19 48 47.77	25.923	22 12 20.9	34.23	20	21 46 25.53	22.966	16 58 27.7	91.30
21	19 51 23.16	25.873	22 8 51.0	35.73	21	21 48 43.13	22.902	16 49 17.3	92.15
22	19 53 58.25	25.823	22 5 12.2	37.21	22	21 51 0.35	22.838	16 40 1.9	92.98
23	19 56 33.04	25.772	22 1 24.5	38.68	23	21 53 17.18	22.773	16 30 41.5	93.81
24	19 59 7.51	25.719	S. 21 57 28.1	40.13	24	21 55 33.63	22.709	S. 16 21 16.2	94.61

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 21.					THURSDAY 23.				
0	21 55 33.63	22.709	S. 16 21 16.2	94.61	0	23 38 1.76	20.192	S. 7 38 31.4	118.68
1	21 57 49.69	22.646	16 11 46.2	95.40	1	23 40 2.80	20.154	7 26 38.6	118.92
2	22 0 5.38	22.583	16 2 11.4	96.18	2	23 42 3.61	20.117	7 14 44.3	119.15
3	22 2 20.69	22.520	15 52 32.0	96.94	3	23 44 4.20	20.080	7 2 48.8	119.35
4	22 4 35.62	22.458	15 42 48.1	97.70	4	23 46 4.57	20.043	6 50 52.1	119.56
5	22 6 50.18	22.395	15 32 59.6	98.44	5	23 48 4.72	20.008	6 38 54.1	119.76
6	22 9 4.36	22.333	15 23 6.8	99.16	6	23 50 4.66	19.973	6 26 55.0	119.94
7	22 11 18.17	22.272	15 13 9.7	99.88	7	23 52 4.40	19.939	6 14 54.8	120.11
8	22 13 31.62	22.211	15 3 8.3	100.58	8	23 54 3.93	19.905	6 2 53.7	120.28
9	22 15 44.70	22.150	14 53 2.8	101.26	9	23 56 3.26	19.872	5 50 51.5	120.44
10	22 17 57.42	22.090	14 42 53.2	101.93	10	23 58 2.39	19.839	5 38 48.4	120.58
11	22 20 9.78	22.029	14 32 39.6	102.59	11	0 0 1.33	19.808	5 26 44.5	120.73
12	22 22 21.77	21.969	14 22 22.1	103.23	12	0 2 0.08	19.777	5 14 39.7	120.86
13	22 24 33.41	21.912	14 12 0.8	103.87	13	0 3 58.65	19.747	5 2 34.2	120.98
14	22 26 44.71	21.853	14 1 35.7	104.49	14	0 5 57.04	19.718	4 50 28.0	121.08
15	22 28 55.65	21.795	13 51 6.9	105.11	15	0 7 55.26	19.688	4 38 21.2	121.18
16	22 31 6.25	21.738	13 40 34.4	105.70	16	0 9 53.30	19.659	4 26 13.8	121.28
17	22 33 16.50	21.680	13 29 58.5	106.28	17	0 11 51.17	19.632	4 14 5.8	121.38
18	22 35 26.41	21.624	13 19 19.1	106.86	18	0 13 48.88	19.605	4 1 57.3	121.45
19	22 37 35.99	21.568	13 8 36.2	107.42	19	0 15 46.43	19.578	3 49 48.4	121.52
20	22 39 45.23	21.513	12 57 50.1	107.96	20	0 17 43.82	19.552	3 37 39.1	121.58
21	22 41 54.14	21.458	12 47 0.7	108.50	21	0 19 41.05	19.527	3 25 29.5	121.63
22	22 44 2.72	21.403	12 36 8.1	109.02	22	0 21 38.14	19.503	3 13 19.6	121.67
23	22 46 10.97	21.348	S. 12 25 12.5	109.53	23	0 23 35.08	19.478	S. 3 1 9.5	121.70
WEDNESDAY 22.					FRIDAY 24.				
0	22 48 18.90	21.295	S. 12 14 13.8	110.03	0	0 25 31.88	19.456	S. 2 48 59.2	121.73
1	22 50 26.51	21.243	12 3 12.2	110.52	1	0 27 28.55	19.433	2 36 48.8	121.74
2	22 52 33.81	21.190	11 52 7.6	111.00	2	0 29 25.08	19.411	2 24 38.3	121.76
3	22 54 40.79	21.138	11 41 0.2	111.46	3	0 31 21.48	19.389	2 12 27.7	121.76
4	22 56 47.47	21.088	11 29 50.1	111.91	4	0 33 17.75	19.369	2 0 17.2	121.75
5	22 58 53.84	21.037	11 18 37.3	112.35	5	0 35 13.91	19.349	1 48 6.7	121.74
6	23 0 59.91	20.987	11 7 21.9	112.78	6	0 37 9.94	19.329	1 35 56.3	121.72
7	23 3 5.68	20.938	10 56 3.9	113.20	7	0 39 5.86	19.310	1 23 46.1	121.68
8	23 5 11.16	20.889	10 44 43.5	113.61	8	0 41 1.66	19.292	1 11 36.1	121.64
9	23 7 16.35	20.841	10 33 20.6	114.00	9	0 42 57.36	19.275	0 59 26.4	121.59
10	23 9 21.25	20.793	10 21 55.4	114.39	10	0 44 52.96	19.258	0 47 17.0	121.54
11	23 11 25.87	20.746	10 10 27.9	114.78	11	0 46 48.45	19.241	0 35 7.9	121.48
12	23 13 30.20	20.699	9 58 58.1	115.14	12	0 48 43.85	19.226	0 22 59.3	121.40
13	23 15 34.26	20.654	9 47 26.2	115.48	13	0 50 39.16	19.210	S. 0 10 51.1	121.33
14	23 17 38.05	20.609	9 35 52.3	115.83	14	0 52 34.37	19.195	N. 0 1 16.7	121.25
15	23 19 41.57	20.564	9 24 16.3	116.17	15	0 54 29.50	19.182	0 13 23.9	121.15
16	23 21 44.82	20.521	9 12 38.3	116.49	16	0 56 24.55	19.168	0 25 30.5	121.05
17	23 23 47.82	20.478	9 0 58.4	116.80	17	0 58 19.52	19.156	0 37 36.5	120.94
18	23 25 50.55	20.434	8 49 16.7	117.09	18	1 0 14.42	19.143	0 49 41.8	120.83
19	23 27 53.03	20.393	8 37 33.3	117.38	19	1 2 9.24	19.132	1 1 46.4	120.70
20	23 29 55.26	20.352	8 25 48.1	117.67	20	1 4 4.00	19.121	1 13 50.2	120.57
21	23 31 57.25	20.311	8 14 1.2	117.94	21	1 5 58.69	19.111	1 25 53.2	120.43
22	23 33 58.99	20.271	8 2 12.8	118.20	22	1 7 53.33	19.101	1 37 55.4	120.29
23	23 36 0.50	20.231	7 50 22.8	118.45	23	1 9 47.90	19.091	1 49 56.7	120.13
24	23 38 1.76	20.192	S. 7 38 31.4	118.68	24	1 11 42.42	19.083	N. 2 1 57.0	119.98

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 25.					MONDAY 27.				
0	11 42.42	19.083	N. 2 157.0	119.98	0	2 43 19.19	19.273	N. 11 540.3	103.88
1	1 13 36.89	19.075	2 13 56.4	119.81	1	2 45 14.87	19.288	11 16 2.1	103.38
2	1 15 31.32	19.068	2 25 54.7	119.63	2	2 47 10.64	19.303	11 26 20.9	102.87
3	1 17 25.70	19.060	2 37 52.0	119.45	3	2 49 6.50	19.318	11 36 36.5	102.34
4	1 19 20.04	19.054	2 49 48.1	119.26	4	2 51 2.45	19.333	11 46 49.0	101.83
5	1 21 14.35	19.049	3 1 43.1	119.06	5	2 52 58.50	19.349	11 56 58.4	101.30
6	1 23 8.63	19.043	3 13 36.8	118.85	6	2 54 54.64	19.366	12 7 4.6	100.76
7	1 25 2.87	19.038	3 25 29.3	118.64	7	2 56 50.89	19.383	12 17 7.5	100.21
8	1 26 57.09	19.034	3 37 20.5	118.43	8	2 58 47.23	19.399	12 27 7.1	99.66
9	1 28 51.28	19.031	3 49 10.4	118.20	9	3 0 43.68	19.417	12 37 3.4	99.10
10	1 30 45.46	19.028	4 0 58.9	117.97	10	3 2 40.23	19.434	12 46 56.3	98.53
11	1 32 39.62	19.025	4 12 46.0	117.73	11	3 4 36.89	19.453	12 56 45.7	97.96
12	1 34 33.76	19.023	4 24 31.6	117.48	12	3 6 33.66	19.471	13 6 31.8	97.38
13	1 36 27.89	19.022	4 36 15.7	117.22	13	3 8 30.54	19.489	13 16 14.3	96.79
14	1 38 22.02	19.021	4 47 58.2	116.95	14	3 10 27.53	19.508	13 25 53.3	96.20
15	1 40 16.14	19.021	4 59 39.1	116.68	15	3 12 24.63	19.526	13 35 28.7	95.60
16	1 42 10.27	19.021	5 11 18.4	116.41	16	3 14 21.84	19.545	13 45 0.5	95.00
17	1 44 4.39	19.021	5 22 56.0	116.13	17	3 16 19.17	19.565	13 54 28.7	94.38
18	1 45 58.52	19.023	5 34 31.9	115.84	18	3 18 16.62	19.585	14 3 53.1	93.76
19	1 47 52.66	19.024	5 46 6.1	115.54	19	3 20 14.19	19.605	14 13 13.8	93.14
20	1 49 46.81	19.027	5 57 38.4	115.23	20	3 22 11.88	19.625	14 22 30.8	92.51
21	1 51 40.98	19.029	6 9 8.9	114.92	21	3 24 9.69	19.645	14 31 43.9	91.87
22	1 53 35.16	19.032	6 20 37.4	114.60	22	3 26 7.62	19.666	14 40 53.2	91.23
23	1 55 29.36	19.036	N. 6 32 4.1	114.28	23	3 28 5.68	19.687	N. 14 49 58.6	90.58
SUNDAY 26.					TUESDAY 28.				
0	1 57 23.59	19.040	N. 6 43 28.8	113.95	0	3 30 3.86	19.708	N. 14 59 0.1	89.92
1	1 59 17.84	19.045	6 54 51.5	113.61	1	3 32 2.17	19.729	15 7 57.6	89.25
2	2 1 12.13	19.050	7 6 12.1	113.26	2	3 34 0.61	19.750	15 16 51.1	88.58
3	2 3 6.44	19.055	7 17 30.6	112.91	3	3 35 59.17	19.772	15 25 40.5	87.89
4	2 5 0.79	19.062	7 28 47.0	112.54	4	3 37 57.87	19.794	15 34 25.8	87.21
5	2 6 55.18	19.068	7 40 1.1	112.18	5	3 39 56.70	19.816	15 43 7.0	86.53
6	2 8 49.61	19.075	7 51 13.1	111.81	6	3 41 55.66	19.838	15 51 44.1	85.83
7	2 10 44.08	19.082	8 2 22.8	111.43	7	3 43 54.75	19.859	16 0 17.0	85.13
8	2 12 38.59	19.090	8 13 30.2	111.03	8	3 45 53.97	19.882	16 8 45.6	84.41
9	2 14 33.16	19.099	8 24 35.2	110.63	9	3 47 53.33	19.905	16 17 9.9	83.69
10	2 16 27.78	19.108	8 35 37.8	110.23	10	3 49 52.83	19.928	16 25 29.9	82.98
11	2 18 22.45	19.116	8 46 38.0	109.83	11	3 51 52.46	19.949	16 33 45.6	82.25
12	2 20 17.17	19.126	8 57 35.7	109.41	12	3 53 52.22	19.972	16 41 56.9	81.51
13	2 22 11.96	19.136	9 8 30.9	108.99	13	3 55 52.12	19.995	16 50 3.7	80.77
14	2 24 6.80	19.146	9 19 23.6	108.56	14	3 57 52.16	20.018	16 58 6.1	80.02
15	2 26 1.71	19.158	9 30 13.6	108.12	15	3 59 52.34	20.042	17 6 3.9	79.26
16	2 27 56.69	19.169	9 41 1.0	107.68	16	4 1 52.66	20.064	17 13 57.2	78.51
17	2 29 51.74	19.181	9 51 45.8	107.23	17	4 3 53.11	20.088	17 21 46.0	77.74
18	2 31 46.86	19.193	10 2 27.8	106.77	18	4 5 53.71	20.111	17 29 30.1	76.96
19	2 33 42.05	19.205	10 13 7.0	106.31	19	4 7 54.44	20.133	17 37 9.5	76.18
20	2 35 37.32	19.218	10 23 43.5	105.84	20	4 9 55.31	20.157	17 44 44.3	75.40
21	2 37 32.66	19.231	10 34 17.1	105.36	21	4 11 56.32	20.181	17 52 14.3	74.61
22	2 39 28.09	19.245	10 44 47.8	104.88	22	4 13 57.48	20.204	17 59 39.6	73.82
23	2 41 23.60	19.258	10 55 15.6	104.38	23	4 15 58.77	20.227	18 7 0.1	73.02
24	2 43 19.19	19.273	N. 11 540.3	103.88	24	4 18 0.20	20.250	N. 18 14 15.8	72.21

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 29.					FRIDAY 31.				
0	4 18 0.20	20.250	N.18 14 15.8	72.21	0	5 57 41.55	21.208	N.22 17 30.3	27.38
1	4 20 1.77	20.273	18 21 26.6	71.38	1	5 59 48.84	21.221	22 20 11.5	26.35
2	4 22 3.48	20.298	18 28 32.4	70.57	2	6 1 56.20	21.233	22 22 46.5	25.32
3	4 24 5.34	20.321	18 35 33.4	69.74	3	6 4 3.64	21.247	22 25 15.3	24.28
4	4 26 7.33	20.343	18 42 29.3	68.90	4	6 6 11.16	21.259	22 27 37.8	23.23
5	4 28 9.46	20.367	18 49 20.2	68.07	5	6 8 18.75	21.271	22 29 54.1	22.19
6	4 30 11.73	20.390	18 56 6.1	67.23	6	6 10 26.41	21.283	22 32 4.1	21.14
7	4 32 14.14	20.413	19 2 46.9	66.38	7	6 12 34.14	21.293	22 34 7.8	20.09
8	4 34 16.69	20.436	19 9 22.6	65.52	8	6 14 41.93	21.303	22 36 5.2	19.05
9	4 36 19.37	20.458	19 15 53.1	64.65	9	6 16 49.78	21.314	22 37 56.4	18.00
10	4 38 22.19	20.482	19 22 18.4	63.79	10	6 18 57.70	21.324	22 39 41.2	16.94
11	4 40 25.15	20.505	19 28 38.6	62.92	11	6 21 5.67	21.333	22 41 19.7	15.88
12	4 42 28.25	20.528	19 34 53.4	62.03	12	6 23 13.70	21.343	22 42 51.8	14.83
13	4 44 31.48	20.550	19 41 3.0	61.16	13	6 25 21.78	21.352	22 44 17.6	13.77
14	4 46 34.85	20.573	19 47 7.3	60.28	14	6 27 29.92	21.360	22 45 37.0	12.71
15	4 48 38.35	20.595	19 53 6.3	59.38	15	6 29 38.10	21.368	22 46 50.1	11.65
16	4 50 41.99	20.618	19 58 59.9	58.48	16	6 31 46.33	21.375	22 47 56.8	10.58
17	4 52 45.76	20.639	20 4 48.1	57.58	17	6 33 54.60	21.382	22 48 57.1	9.51
18	4 54 49.66	20.661	20 10 30.9	56.68	18	6 36 2.91	21.388	22 49 50.9	8.43
19	4 56 53.69	20.683	20 16 8.2	55.76	19	6 38 11.26	21.395	22 50 38.4	7.38
20	4 58 57.85	20.704	20 21 40.0	54.84	20	6 40 19.65	21.401	22 51 19.5	6.31
21	5 1 2.14	20.726	20 27 6.3	53.92	21	6 42 28.07	21.406	22 51 54.1	5.23
22	5 3 6.56	20.747	20 32 27.0	52.98	22	6 44 36.52	21.411	22 52 22.3	4.17
23	5 5 11.10	20.767	N.20 37 42.1	52.06	23	6 46 45.00	21.415	N.22 52 44.1	3.10
THURSDAY 30.					SATURDAY, JUNE 1.				
0	5 7 15.76	20.788	N.20 42 51.7	51.13	0	6 48 53.50	21.419	N.22 52 59.5	2.03
1	5 9 20.55	20.809	20 47 55.6	50.18					
2	5 11 25.47	20.829	20 52 53.9	49.23					
3	5 13 30.50	20.849	20 57 46.4	48.28					
4	5 15 35.66	20.870	21 2 33.2	47.33					
5	5 17 40.94	20.889	21 7 14.3	46.37					
6	5 19 46.33	20.908	21 11 49.6	45.40					
7	5 21 51.84	20.928	21 16 19.1	44.43					
8	5 23 57.46	20.947	21 20 42.8	43.46					
9	5 26 3.20	20.966	21 25 0.6	42.48					
10	5 28 9.05	20.983	21 29 12.6	41.51					
11	5 30 15.00	21.002	21 33 18.7	40.52					
12	5 32 21.07	21.020	21 37 18.8	39.53					
13	5 34 27.24	21.038	21 41 13.0	38.53					
14	5 36 33.52	21.054	21 45 1.2	37.53					
15	5 38 39.89	21.071	21 48 43.4	36.53					
16	5 40 46.37	21.088	21 52 19.6	35.53					
17	5 42 52.95	21.104	21 55 49.8	34.53					
18	5 44 59.62	21.120	21 59 13.9	33.51					
19	5 47 6.39	21.135	22 2 31.9	32.50					
20	5 49 13.24	21.150	22 5 43.9	31.48					
21	5 51 20.19	21.166	22 8 49.7	30.46					
22	5 53 27.23	21.180	22 11 49.4	29.43					
23	5 55 34.35	21.193	22 14 42.9	28.41					
24	5 57 41.55	21.208	N.22 17 30.3	27.38					

PHASES OF THE MOON.

May 7) First Quarter	- - 18 42.5.
14	○ Full Moon	- - 18 42.2
21	(Last Quarter	- - 9 53.1
29	● New Moon	- - 5 19.6

May 3	(Apogee	- - - - 9
15	(Perigee	- - - - 19
30	(Apogee	- - - - 18

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.		Noon.	P.L. of diff.	III ^a .	P.L. of diff.	VI ^a .	P.L. of diff.	IX ^a .	P.L. of diff.
1	Sun	W.	16 10 22	3546	17 29 55	3530	18 49 46	3516	20 9 52	3505
	Pollux	E.	55 32 12	3046	54 2 56	3052	52 33 48	3060	51 4 49	3066
	Saturn	E.	76 45 49	3023	75 16 5	3028	73 46 27	3034	72 16 56	3039
	Regulus	E.	91 17 14	3017	89 47 22	3022	88 17 37	3027	86 47 58	3033
2	Sun	W.	26 52 29	3482	28 13 13	3482	29 33 57	3480	30 54 43	3480
	Pollux	E.	43 41 55	3099	42 13 44	3106	40 45 42	3113	39 17 48	3119
	Saturn	E.	64 50 51	3061	63 21 54	3065	61 53 2	3069	60 24 14	3073
	Regulus	E.	79 21 14	3055	77 52 9	3058	76 23 8	3062	74 54 12	3066
3	Sun	W.	37 38 39	3479	38 59 27	3479	40 20 15	3478	41 41 4	3478
	Pollux	E.	32 0 30	3160	30 33 33	3169	29 6 47	3180	27 40 14	3193
	Saturn	E.	53 1 14	3086	51 32 47	3087	50 4 22	3090	48 36 0	3091
	Regulus	E.	67 30 30	3079	66 1 55	3081	64 33 22	3082	63 4 51	3083
	Spica	E.	121 21 35	3116	119 53 45	3117	118 25 56	3117	116 58 7	3117
4	Sun	W.	48 25 20	3471	49 46 16	3470	51 7 14	3467	52 28 15	3464
	Saturn	E.	41 14 22	3092	39 46 3	3091	38 17 42	3091	36 49 21	3089
	Regulus	E.	55 42 32	3086	54 14 5	3085	52 45 37	3084	51 17 8	3082
	Spica	E.	109 38 56	3114	108 11 3	3112	106 43 8	3110	105 15 10	3108
5	Sun	W.	59 14 13	3446	60 35 37	3440	61 57 8	3435	63 18 45	3430
	Saturn	E.	29 27 2	3078	27 58 25	3074	26 29 43	3070	25 0 57	3066
	Regulus	E.	43 54 12	3072	42 25 28	3069	40 56 40	3065	39 27 47	3061
	Spica	E.	97 54 34	3092	96 26 15	3087	94 57 50	3083	93 29 20	3078
6	Sun	W.	70 8 36	3394	71 30 59	3386	72 53 32	3377	74 16 15	3367
	Regulus	E.	32 2 8	3038	30 32 42	3033	29 3 10	3027	27 33 31	3022
	Spica	E.	86 5 8	3047	84 35 54	3040	83 6 31	3033	81 36 59	3025
7	Sun	W.	81 12 41	3313	82 36 37	3302	84 0 46	3289	85 25 10	3277
	Pollux	W.	17 9 50	3204	18 35 54	3155	20 2 57	3113	21 30 51	3077
	Spica	E.	74 6 38	2979	72 35 59	2969	71 5 7	2958	69 34 1	2946
	Antares	E.	119 59 55	2991	118 29 31	2980	116 58 53	2966	115 27 58	2954
8	Sun	W.	92 31 5	3205	93 57 8	3191	95 23 28	3175	96 50 7	3158
	Pollux	W.	29 0 6	2939	30 31 35	2917	32 3 32	2895	33 35 57	2874
	Spica	E.	61 54 55	2887	60 22 20	2874	58 49 28	2862	57 16 20	2848
	Antares	E.	107 49 12	2884	106 16 33	2869	104 43 35	2855	103 10 18	2838
9	Sun	W.	104 8 25	3073	105 37 8	3054	107 6 14	3037	108 35 41	3018
	Pollux	W.	41 24 43	2772	42 59 47	2753	44 35 17	2732	46 11 14	2713
	Saturn	W.	19 23 8	2744	20 58 49	2728	22 34 52	2711	24 11 17	2693
	Spica	E.	49 26 18	2781	47 51 25	2766	46 16 13	2753	44 40 44	2740
	Antares	E.	95 18 44	2759	93 43 22	2741	92 7 36	2725	90 31 29	2707
10	Sun	W.	116 8 51	2922	117 40 42	2903	119 12 57	2883	120 45 38	2864
	Pollux	W.	54 17 29	2615	55 56 4	2595	57 35 6	2575	59 14 35	2556
	Saturn	W.	32 19 37	2599	33 58 33	2580	35 37 55	2562	37 17 42	2543
	Regulus	W.	18 22 11	2640	20 0 11	2614	21 38 47	2588	23 17 58	2564
	Spica	E.	36 39 0	2679	35 1 52	2669	33 24 31	2661	31 46 59	2654
	Antares	E.	82 24 58	2618	80 46 28	2600	79 7 33	2583	77 28 14	2564
	Jupiter	E.	111 35 1	2564	109 55 17	2546	108 15 7	2528	106 34 32	2509

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	SUN	W.	21 30 11	3497	22 50 38	3492	24 11 11	3488	25 31 48	3485
	Pollux	E.	49 35 58	3073	48 7 15	3079	46 38 40	3086	45 10 13	3093
	Saturn	E.	70 47 31	3044	69 18 13	3048	67 49 0	3053	66 19 53	3057
	Regulus	E.	85 18 26	3037	83 48 59	3043	82 19 39	3047	80 50 24	3051
2	SUN	W.	32 15 30	3480	33 36 17	3480	34 57 4	3479	36 17 52	3480
	Pollux	E.	37 50 2	3127	36 22 25	3134	34 54 57	3143	33 27 39	3150
	Saturn	E.	58 55 31	3076	57 26 52	3078	55 58 16	3081	54 29 43	3084
	Regulus	E.	73 25 21	3069	71 56 33	3072	70 27 49	3074	68 59 8	3077
3	SUN	W.	43 1 53	3472	44 22 43	3476	45 43 34	3475	47 4 26	3473
	Pollux	E.	26 13 56	3205	24 47 53	3221	23 22 9	3240	21 56 47	3262
	Saturn	E.	47 7 39	3092	45 39 19	3092	44 11 0	3092	42 42 41	3092
	Regulus	E.	61 36 21	3085	60 7 53	3086	58 39 26	3086	57 10 59	3086
	Spica	E.	115 30 18	3117	114 2 29	3116	112 34 39	3115	111 6 48	3114
4	SUN	W.	53 49 19	3462	55 10 26	3458	56 31 37	3454	57 52 53	3450
	Saturn	E.	35 20 58	3088	33 52 34	3085	32 24 6	3083	30 55 36	3080
	Regulus	E.	49 48 37	3082	48 20 5	3079	46 51 30	3077	45 22 52	3075
	Spica	E.	103 47 10	3105	102 19 7	3102	100 51 0	3099	99 22 49	3096
5	SUN	W.	64 40 28	3423	66 2 18	3416	67 24 16	3409	68 46 22	3402
	Saturn	E.	23 32 6	3062	22 3 10	3058	20 34 9	3053	19 5 2	3048
	Regulus	E.	37 58 50	3057	36 29 48	3052	35 0 40	3048	33 31 27	3043
	Spica	E.	92 0 44	3073	90 32 1	3067	89 3 11	3060	87 34 13	3055
6	SUN	W.	75 39 9	3358	77 2 14	3347	78 25 31	3337	79 49 0	3326
	Regulus	E.	26 3 46	3018	24 33 56	3013	23 3 59	3008	21 33 56	3003
	Spica	E.	80 7 17	3016	78 37 24	3007	77 7 20	2998	75 37 5	2989
7	SUN	W.	86 49 48	3263	88 14 43	3250	89 39 53	3235	91 5 21	3221
	Pollux	W.	22 59 29	3045	24 28 46	3015	25 58 40	2989	27 29 7	2963
	Spica	E.	68 2 41	2935	66 31 7	2924	64 59 19	2912	63 27 15	2899
	Antares	E.	113 56 47	2940	112 25 19	2927	110 53 35	2913	109 21 33	2898
8	SUN	W.	98 17 6	3142	99 44 25	3125	101 12 4	3108	102 40 4	3091
	Pollux	W.	35 8 49	2853	36 42 8	2832	38 15 54	2813	39 50 5	2792
	Spica	E.	55 42 55	2835	54 9 12	2821	52 35 12	2808	51 0 54	2794
	Antares	E.	101 36 40	2824	100 2 43	2808	98 28 25	2791	96 53 45	2775
9	SUN	W.	110 5 32	2999	111 35 46	2980	113 6 24	2962	114 37 25	2942
	Pollux	W.	47 47 36	2694	49 24 24	2674	51 1 39	2654	52 39 21	2635
	Saturn	W.	25 48 6	2674	27 25 21	2655	29 3 1	2636	30 41 7	2618
	Spica	E.	43 4 57	2726	41 28 52	2714	39 52 31	2701	38 15 53	2690
	Antares	E.	88 54 58	2689	87 18 4	2672	85 40 46	2654	84 3 4	2636
10	SUN	W.	122 18 43	2844	123 52 14	2824	125 26 11	2805	127 0 33	2785
	Pollux	W.	60 54 31	2536	62 34 54	2517	64 15 44	2497	65 57 2	2477
	Saturn	W.	38 57 55	2524	40 38 35	2505	42 19 41	2487	44 1 13	2467
	Regulus	W.	24 57 43	2540	26 38 0	2518	28 18 48	2497	30 0 6	2475
	Spica	E.	30 9 17	2649	28 31 28	2646	26 53 35	2647	25 15 44	2652
	Antares	E.	75 48 29	2546	74 8 20	2528	72 27 46	2510	70 46 47	2492
	Jupiter	E.	104 53 31	2490	103 12 4	2471	101 30 10	2453	99 47 50	2434

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
			^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
11	SUN	W.	128 35 20	2766	130 10 33	2747	131 46 11	2727	133 22 15	2709
	Pollux	W.	67 38 47	2458	69 20 59	2439	71 3 38	2419	72 46 45	2401
	Saturn	W.	45 43 12	2448	47 25 38	2431	49 8 29	2411	50 51 48	2393
	Regulus	W.	31 41 54	2453	33 24 13	2433	35 7 0	2413	36 50 16	2394
	Antares	E.	69 5 22	2475	67 23 33	2458	65 41 20	2440	63 58 42	2423
	Jupiter	E.	98 5 4	2415	96 21 51	2396	94 38 11	2378	92 54 5	2360
12	Pollux	W.	81 28 56	2310	83 14 41	2294	85 0 50	2276	86 47 25	2260
	Saturn	W.	59 34 54	2304	61 20 48	2286	63 7 8	2269	64 53 53	2253
	Regulus	W.	45 33 34	2299	47 19 35	2281	49 6 2	2264	50 52 54	2247
	Antares	E.	55 19 37	2343	53 34 40	2329	51 49 23	2315	50 3 45	2302
	Jupiter	E.	84 6 58	2270	82 20 15	2253	80 33 6	2237	78 45 33	2220
	α Aquilæ	E.	101 44 36	2969	100 13 45	2945	98 42 23	2922	97 10 32	2901
13	Pollux	W.	95 46 14	2183	97 35 7	2169	99 24 21	2157	101 13 54	2143
	Saturn	W.	73 53 32	2176	75 42 35	2163	77 31 59	2149	79 21 44	2136
	Regulus	W.	59 53 24	2169	61 42 39	2155	63 32 15	2140	65 22 13	2128
	Antares	E.	41 11 11	2249	39 23 57	2243	37 36 34	2238	35 49 3	2235
	Jupiter	E.	69 41 45	2143	67 51 52	2129	66 1 37	2116	64 11 2	2103
	α Aquilæ	E.	89 25 0	2815	87 50 52	2803	86 16 28	2792	84 41 49	2783
14	Saturn	W.	88 35 2	2080	90 26 32	2071	92 18 15	2063	94 10 11	2055
	Regulus	W.	74 36 40	2071	76 28 24	2062	78 20 21	2053	80 12 32	2045
	Spica	W.	21 34 34	2304	23 20 27	2262	25 7 22	2227	26 55 9	2197
	Jupiter	E.	54 53 26	2046	53 1 4	2038	51 8 29	2029	49 15 40	2021
	α Aquilæ	E.	76 46 33	2767	75 11 22	2771	73 36 16	2776	72 1 17	2785
	Fomalhaut	E.	109 41 48	2287	107 55 30	2274	106 8 52	2262	104 21 55	2249
15	Saturn	W.	103 32 30	2027	105 25 22	2023	107 18 20	2021	109 11 21	2019
	Regulus	W.	89 36 10	2017	91 29 18	2014	93 22 31	2010	95 15 49	2009
	Spica	W.	36 3 14	2104	37 54 7	2093	39 45 17	2084	41 36 41	2076
	Jupiter	E.	39 48 53	1993	37 55 7	1989	36 1 15	1986	34 7 19	1984
	α Aquilæ	E.	64 10 10	2867	62 37 9	2894	61 4 42	2924	59 32 54	2959
	Fomalhaut	E.	95 23 30	2210	93 35 18	2206	91 46 59	2202	89 58 35	2200
16	Regulus	W.	104 42 40	2010	106 35 58	2013	108 29 12	2016	110 22 21	2020
	Spica	W.	50 55 58	2058	52 48 2	2057	54 40 7	2058	56 32 11	2060
	α Aquilæ	E.	52 6 47	3213	50 40 53	3283	49 16 22	3362	47 53 22	3451
	Fomalhaut	E.	80 56 25	2208	79 8 9	2213	77 20 1	2218	75 32 1	2227
	α Pegasi	E.	97 31 18	2408	95 47 55	2408	94 4 32	2410	92 21 11	2412
17	Spica	W.	65 51 21	2082	67 42 48	2088	69 34 5	2096	71 25 11	2104
	Antares	W.	20 41 44	2333	22 26 56	2298	24 12 59	2273	25 59 38	2255
	α Aquilæ	E.	41 26 56	4084	40 16 39	4263	39 9 12	4466	38 4 50	4696
	Fomalhaut	E.	66 35 28	2283	64 49 3	2298	63 3 0	2315	61 17 22	2333
	α Pegasi	E.	83 46 7	2448	82 3 41	2460	80 21 31	2473	78 39 40	2487
18	Spica	W.	80 37 13	2154	82 26 50	2166	84 16 9	2178	86 5 10	2190
	Antares	W.	34 57 12	2229	36 44 56	2233	38 32 35	2237	40 20 8	2243
	Fomalhaut	E.	52 36 35	2450	50 54 12	2480	49 12 30	2512	47 31 34	2546
	α Pegasi	E.	70 16 7	2582	68 36 47	2606	66 58 0	2632	65 19 48	2659
	Venus	E.	110 3 37	2098	108 12 35	2111	106 21 53	2124	104 31 30	2137
	SUN	E.	134 46 33	2431	133 3 42	2443	131 21 8	2455	129 38 51	2468

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XX ^h .	P.L. of diff.
11	SUN W.	134 58 43	2689	136 35 37	2672	138 12 54	2654	139 50 36	2636
	Pollux W.	74 30 18	2382	76 14 18	2364	77 58 44	2345	79 43 37	2328
	Saturn W.	52 35 33	2375	54 19 44	2357	56 4 21	2338	57 49 25	2321
	Regulus W.	38 34 0	2374	40 18 12	2354	42 2 53	2336	43 48 0	2317
	Antares E.	62 15 40	2406	60 32 14	2389	58 48 24	2374	57 4 12	2358
	Jupiter E.	91 9 32	2342	89 24 33	2324	87 39 8	2305	85 53 16	2287
12	Pollux W.	88 34 24	2243	90 21 47	2227	92 9 34	2212	93 57 43	2198
	Saturn W.	66 41 2	2237	68 28 35	2221	70 16 31	2206	72 4 50	2190
	Regulus W.	52 40 12	2231	54 27 54	2214	56 16 1	2198	58 4 31	2183
	Antares E.	48 17 48	2289	46 31 32	2278	44 45 0	2268	42 58 13	2258
	Jupiter E.	76 57 35	2203	75 9 12	2188	73 20 26	2173	71 31 17	2157
	α Aquilæ E.	95 38 14	2280	94 5 29	2262	92 32 21	2245	90 58 51	2228
13	Pollux W.	103 3 47	2132	104 53 57	2120	106 44 25	2110	108 35 9	2099
	Saturn W.	81 11 48	2124	83 2 11	2112	84 52 52	2101	86 43 49	2091
	Regulus W.	67 12 30	2115	69 3 6	2103	70 54 0	2092	72 45 12	2081
	Antares E.	34 1 28	2235	32 13 52	2236	30 26 18	2241	28 38 52	2251
	Jupiter E.	62 20 7	2090	60 28 53	2079	58 37 21	2067	56 45 31	2057
	α Aquilæ E.	83 6 59	2776	81 32 0	2771	79 56 54	2768	78 21 44	2767
14	Saturn W.	96 2 19	2048	97 54 38	2042	99 47 7	2036	101 39 45	2032
	Regulus W.	82 4 56	2039	83 57 30	2032	85 50 15	2026	87 43 9	2021
	Spica W.	28 43 41	2172	30 32 51	2151	32 22 33	2133	34 12 42	2118
	Jupiter E.	47 22 39	2014	45 29 27	2007	43 36 4	2002	41 42 33	1996
	α Aquilæ E.	70 26 29	2795	68 51 54	2808	67 17 37	2825	65 43 41	2844
	Fomalhaut E.	102 34 41	2239	100 47 11	2231	98 59 29	2223	97 11 35	2215
15	Saturn W.	111 4 26	2018	112 57 32	2018	114 50 39	2018	116 43 45	2019
	Regulus W.	97 9 10	2008	99 2 32	2007	100 55 56	2007	102 49 19	2007
	Spica W.	43 28 17	2070	45 20 3	2065	47 11 56	2061	49 3 55	2059
	Jupiter E.	32 13 19	1982	30 19 17	1982	28 25 15	1982	26 31 12	1983
	α Aquilæ E.	58 1 50	2998	56 31 35	3043	55 2 15	3093	53 33 57	3149
	Fomalhaut E.	88 10 8	2200	86 21 40	2200	84 33 12	2202	82 44 47	2204
16	Regulus W.	112 15 24	2025	114 8 19	2030	116 1 6	2037	117 53 43	2044
	Spica W.	58 24 12	2063	60 16 8	2066	62 8 0	2071	63 59 44	2075
	α Aquilæ E.	46 32 3	3550	45 12 34	3662	43 55 6	3786	42 39 49	3926
	Fomalhaut E.	73 44 13	2235	71 56 38	2245	70 9 18	2256	68 22 14	2268
	α Pegasi E.	90 37 54	2417	88 54 43	2422	87 11 40	2430	85 28 48	2438
17	Spica W.	73 16 4	2113	75 6 44	2122	76 57 9	2132	78 47 19	2143
	Antares W.	27 46 44	2242	29 34 9	2235	31 21 45	2231	33 9 27	2229
	α Aquilæ E.	37 3 47	4959	36 6 19	5260	35 12 42	5608	34 23 13	6013
	Fomalhaut E.	59 32 11	2353	57 47 28	2374	56 3 16	2398	54 19 38	2422
	α Pegasi E.	76 58 8	2503	75 16 59	2521	73 36 15	2540	71 55 57	2560
18	Spica W.	87 53 52	2203	89 42 15	2217	91 30 17	2231	93 17 59	2245
	Antares W.	42 7 32	2250	43 54 45	2259	45 41 45	2268	47 28 32	2277
	Fomalhaut E.	45 51 25	2585	44 12 9	2626	42 33 50	2672	40 56 32	2722
	α Pegasi E.	63 42 13	2687	62 5 16	2719	60 29 2	2753	58 53 32	2788
	Venus E.	102 41 27	2151	100 51 45	2165	99 2 24	2179	97 13 25	2194
	SUN E.	127 56 53	2481	126 15 13	2494	124 33 52	2508	122 52 50	2523

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]	
19	Spica W.	95 5 20	2259	96 52 20	2274	98 38 57	2289	100 25 13	2304
	Antares W.	49 15 5	2288	51 1 22	2300	52 47 21	2312	54 33 3	2324
	Jupiter W.	20 8 59	2204	21 57 21	2217	23 45 23	2233	25 33 2	2247
	Fomalhaut E.	39 20 21	2776	37 45 22	2838	36 11 43	2906	34 39 32	2982
	α Pegasi E.	57 18 49	2827	55 44 56	2867	54 11 55	2911	52 39 50	2958
	Venus E.	95 24 49	2210	93 36 36	2225	91 48 46	2240	90 1 18	2257
	SUN E.	121 12 9	2538	119 31 49	2553	117 51 49	2569	116 12 11	2584
20	Antares W.	63 16 51	2392	65 0 37	2406	66 44 3	2421	68 27 8	2436
	Jupiter W.	34 25 49	2322	36 11 16	2338	37 56 20	2354	39 41 1	2369
	α Aquilæ W.	33 36 37	2277	34 19 2	2291	35 5 8	2306	35 54 36	2321
	α Pegasi E.	45 15 40	2356	43 50 37	2371	42 27 1	2385	41 5 1	2399
	Venus E.	81 10 4	2339	79 25 2	2357	77 40 25	2373	75 56 12	2391
	SUN E.	107 59 24	2665	106 21 57	2681	104 44 52	2698	103 8 9	2715
21	Antares W.	76 57 18	2510	78 38 18	2525	80 18 56	2540	81 59 14	2554
	Jupiter W.	48 18 55	2446	50 1 25	2462	51 43 32	2476	53 25 19	2492
	α Aquilæ W.	40 43 33	2462	41 47 59	2477	42 54 11	2492	44 1 57	2507
	Venus E.	67 21 16	2477	65 39 30	2494	63 58 8	2510	62 17 9	2527
	SUN E.	95 10 7	2798	93 35 36	2814	92 1 26	2831	90 27 38	2846
22	Antares W.	90 15 39	2628	91 53 56	2642	93 31 54	2656	95 9 33	2670
	Jupiter W.	61 49 1	2564	63 28 46	2578	65 8 11	2592	66 47 17	2605
	α Aquilæ W.	49 59 25	2387	51 13 49	2399	52 28 57	2411	53 44 44	2424
	Venus E.	53 58 8	2611	52 19 28	2628	50 41 11	2644	49 3 16	2661
	SUN E.	82 43 45	2926	81 11 59	2942	79 40 33	2956	78 9 25	2971
23	Antares W.	103 13 9	2738	104 48 58	2750	106 24 31	2764	107 59 46	2777
	Jupiter W.	74 58 16	2671	76 35 35	2683	78 12 38	2695	79 49 25	2707
	α Aquilæ W.	60 11 13	2608	61 29 39	2620	62 48 21	2632	64 7 17	2644
	Fomalhaut W.	25 3 41	2406	26 14 25	2418	27 27 24	2430	28 42 19	2442
	Venus E.	40 59 9	2741	39 23 24	2756	37 47 59	2773	36 12 56	2789
	SUN E.	70 38 20	3043	69 9 0	3056	67 39 56	3069	66 11 9	3082
24	Jupiter W.	87 49 29	2763	89 24 46	2772	90 59 50	2782	92 34 41	2793
	α Aquilæ W.	70 44 22	2537	72 4 5	2545	73 23 51	2554	74 43 38	2562
	Fomalhaut W.	35 17 15	2423	36 39 5	2438	38 1 35	2453	39 24 38	2468
	SUN E.	58 51 6	3144	57 23 50	3156	55 56 48	3168	54 30 0	3178
25	Jupiter W.	100 25 44	2838	101 59 22	2847	103 32 49	2855	105 6 5	2863
	α Aquilæ W.	81 22 28	2542	82 42 6	2546	84 1 39	2550	85 21 8	2556
	Fomalhaut W.	46 25 57	2453	47 51 4	2457	49 16 22	2465	50 41 50	2473
	SUN E.	47 19 11	3231	45 53 38	3241	44 28 17	3250	43 3 7	3260
26	α Aquilæ W.	91 56 48	2592	93 15 31	2600	94 34 5	2610	95 52 28	2621
	Fomalhaut W.	57 50 45	2409	59 16 44	2417	60 42 45	2426	62 8 47	2434
	SUN E.	36 0 1	3305	34 35 55	3314	33 12 0	3322	31 48 14	3331
31	SUN W.	19 19 55	3488	20 40 33	3493	22 1 16	3497	23 22 6	3499
	Saturn E.	45 54 1	3106	44 25 59	3107	42 57 58	3106	41 29 56	3107
	Spica E.	112 45 56	3114	111 18 4	3114	109 50 11	3112	108 22 16	3111

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
19	Spica W.	102 11 6	2320	103 56 36	2336	105 41 43	2352	107 26 27	2368
	Antares W.	56 18 27	2337	58 3 33	2350	59 48 19	2364	61 32 45	2378
	Jupiter W.	27 20 20	2262	29 7 16	2277	30 53 49	2292	32 40 1	2308
	Fomalhaut E.	33 8 57	3069	31 40 10	3168	30 13 22	3280	28 48 47	3411
	α Pegasi E.	51 8 45	3009	49 38 43	3064	48 9 49	3122	46 42 6	3186
	Venus E.	88 14 15	2273	86 27 36	2289	84 41 21	2306	82 55 30	2323
	Sun E.	114 32 54	2599	112 53 58	2616	111 15 25	2632	109 37 13	2649
20	Antares W.	70 9 51	2450	71 52 15	2465	73 34 17	2480	75 15 58	2495
	Jupiter W.	41 25 20	2385	43 9 17	2400	44 52 52	2415	46 36 5	2431
	α Aquilæ W.	36 47 12	5115	37 42 38	4917	38 40 39	4744	39 41 2	4593
	α Pegasi E.	39 44 42	3606	38 26 14	3716	37 9 44	3840	35 55 23	3977
	Venus E.	74 12 24	2408	72 29 1	2425	70 46 2	2442	69 3 27	2459
	Sun E.	101 31 49	2731	99 55 50	2748	98 20 14	2765	96 45 0	2781
21	Antares W.	83 39 12	2569	85 18 49	2585	86 58 5	2599	88 37 2	2613
	Jupiter W.	55 6 44	2506	56 47 49	2521	58 28 33	2535	60 8 57	2550
	α Aquilæ W.	45 11 8	4073	46 21 36	4003	47 33 13	3941	48 45 51	3886
	Venus E.	60 36 34	2545	58 56 23	2561	57 16 35	2578	55 37 10	2595
	Sun E.	88 54 10	2863	87 21 4	2878	85 48 17	2894	84 15 51	2910
22	Antares W.	96 46 53	2684	98 23 54	2698	100 0 37	2711	101 37 2	2725
	Jupiter W.	68 26 5	2619	70 4 34	2632	71 42 45	2645	73 20 39	2658
	α Aquilæ W.	55 1 6	3693	56 18 0	3668	57 35 21	3645	58 53 7	3626
	Venus E.	47 25 44	2677	45 48 33	2692	44 11 43	2709	42 35 15	2725
	Sun E.	76 38 36	2985	75 8 5	3000	73 37 52	3015	72 7 58	3028
23	Antares W.	109 34 44	2789	111 9 26	2802	112 43 51	2814	114 18 1	2827
	Jupiter W.	81 25 56	2719	83 2 11	2729	84 38 12	2741	86 13 57	2751
	α Aquilæ W.	65 26 25	3560	66 45 43	3552	68 5 10	3546	69 24 43	3541
	Fomalhaut W.	29 58 52	3635	31 16 49	3568	32 35 58	3511	33 56 10	3463
	Venus E.	34 38 14	2805	33 3 53	2821	31 29 53	2838	29 56 15	2855
	Sun E.	64 42 38	3095	63 14 22	3108	61 46 22	3120	60 18 37	3132
24	Jupiter W.	94 9 18	2802	95 43 43	2812	97 17 55	2821	98 51 56	2831
	α Aquilæ W.	76 3 27	3533	77 23 15	3535	78 43 1	3535	80 2 46	3538
	Fomalhaut W.	40 48 11	3313	42 12 8	3294	43 36 27	3278	45 1 4	3265
	Sun E.	53 3 24	3189	51 37 2	3200	50 10 53	3210	48 44 56	3220
25	Jupiter W.	106 39 11	2872	108 12 6	2879	109 44 52	2887	111 17 28	2893
	α Aquilæ W.	86 40 30	3562	87 59 46	3568	89 18 55	3576	90 37 56	3584
	Fomalhaut W.	52 7 26	3223	53 33 8	3218	54 58 56	3214	56 24 49	3211
	Sun E.	41 38 9	3269	40 13 21	3278	38 48 44	3287	37 24 17	3296
26	α Aquilæ W.	97 10 40	3632	98 28 40	3643	99 46 28	3655	101 4 3	3667
	Fomalhaut W.	63 34 51	3205	65 0 54	3205	66 26 57	3205	67 53 0	3205
	Sun E.	30 24 38	3339	29 1 12	3348	27 37 56	3358	26 14 51	3366
31	Sun W.	24 43 0	3469	26 3 59	3465	27 25 2	3462	28 46 9	3457
	Saturn E.	40 1 55	3105	38 33 52	3105	37 5 49	3105	35 37 46	3104
	Spica E.	106 54 20	3110	105 26 23	3109	103 58 24	3107	102 30 23	3105

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subd. from added to Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
Sat.	1	h m s	s	° ' "	"	m s	m s	s
	1	4 38 14.33	10.241	N.22 7 21.6	19.98	1 8.43	2 23.61	0.384
Sun.	2	4 42 20.31	10.257	22 15 9.5	19.01	1 8.48	2 14.21	0.399
Mon.	3	4 46 26.65	10.271	22 22 34.0	18.03	1 8.53	2 4.45	0.414
Tues.	4	4 50 33.34	10.285	22 29 35.1	17.05	1 8.58	1 54.35	0.428
Wed.	5	4 54 40.35	10.299	22 36 12.6	16.07	1 8.63	1 43.93	0.441
Thur.	6	4 58 47.67	10.311	22 42 26.3	15.07	1 8.67	1 33.20	0.453
Frid.	7	5 2 55.27	10.322	22 48 16.0	14.07	1 8.71	1 22.19	0.464
Sat.	8	5 7 3.13	10.332	22 53 41.7	13.07	1 8.75	1 10.91	0.475
Sun.	9	5 11 11.23	10.342	22 58 43.2	12.06	1 8.78	0 59.40	0.484
Mon.	10	5 15 19.56	10.351	23 3 20.4	11.04	1 8.81	0 47.66	0.494
Tues.	11	5 19 28.10	10.360	23 7 33.2	10.03	1 8.84	0 35.71	0.502
Wed.	12	5 23 36.83	10.368	23 11 21.6	9.01	1 8.87	0 23.57	0.510
Thur.	13	5 27 45.74	10.374	23 14 45.5	7.98	1 8.90	0 11.25	0.516
Frid.	14	5 31 54.80	10.380	23 17 44.8	6.96	1 8.92	0 1.22	0.522
Sat.	15	5 36 3.99	10.386	23 20 19.6	5.94	1 8.94	0 13.82	0.527
Sun.	16	5 40 13.31	10.390	23 22 29.7	4.91	1 8.95	0 26.54	0.532
Mon.	17	5 44 22.72	10.394	23 24 15.1	3.88	1 8.95	0 39.36	0.536
Tues.	18	5 48 32.21	10.397	23 25 35.8	2.85	1 8.96	0 52.26	0.539
Wed.	19	5 52 41.76	10.399	23 26 31.7	1.81	1 8.96	1 5.21	0.540
Thur.	20	5 56 51.34	10.399	23 27 2.8	0.78	1 8.96	1 18.20	0.541
Frid.	21	6 1 0.93	10.399	23 27 9.1	0.25	1 8.96	1 31.20	0.541
Sat.	22	6 5 10.51	10.399	23 26 50.7	1.29	1 8.96	1 44.19	0.540
Sun.	23	6 9 20.06	10.397	23 26 7.4	2.32	1 8.95	1 57.14	0.538
Mon.	24	6 13 29.55	10.393	23 24 59.4	3.35	1 8.94	2 10.03	0.535
Tues.	25	6 17 38.94	10.389	23 23 26.7	4.38	1 8.92	2 22.83	0.531
Wed.	26	6 21 48.22	10.384	23 21 29.3	5.41	1 8.90	2 35.52	0.526
Thur.	27	6 25 57.36	10.377	23 19 7.2	6.43	1 8.88	2 48.07	0.519
Frid.	28	6 30 6.32	10.369	23 16 20.6	7.45	1 8.85	3 0.44	0.511
Sat.	29	6 34 15.09	10.361	23 13 9.5	8.47	1 8.82	3 12.62	0.503
Sun.	30	6 38 23.64	10.351	23 9 33.9	9.49	1 8.79	3 24.58	0.493
Mon.	31	6 42 31.94	10.340	N.23 5 34.1	10.50	1 8.76	3 36.29	0.482

* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subt. from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
Sat.	1	^h 4 ^m 38 ^s 14 ⁷⁴	N. 22° 7' 22 ⁴	15' 48 ¹	^m 2 23 ⁵⁹	^h 4 40 ³⁸ 33
Sun.	2	4 42 20 ⁶⁹	22 15 10 ²	15 47 ⁹	2 14 ²⁰	4 44 34 ⁸⁹
Mon.	3	4 46 27 ⁰¹	22 22 34 ⁷	15 47 ⁸	2 4 ⁴⁴	4 48 31 ⁴⁵
Tues.	4	4 50 33 ⁶⁷	22 29 35 ⁷	15 47 ⁷	1 54 ³⁴	4 52 28 ⁰¹
Wed.	5	4 54 40 ⁶⁵	22 36 13 ¹	15 47 ⁶	1 43 ⁹¹	4 56 24 ⁵⁶
Thur.	6	4 58 47 ⁹³	22 42 26 ⁷	15 47 ⁵	1 33 ¹⁹	5 0 21 ¹²
Frid.	7	5 2 55 ⁵⁰	22 48 16 ³	15 47 ⁴	1 22 ¹⁸	5 4 17 ⁶⁸
Sat.	8	5 7 3 ³³	22 53 42 ⁰	15 47 ³	1 10 ⁹¹	5 8 14 ²³
Sun.	9	5 11 11 ⁴⁰	22 58 43 ⁴	15 47 ²	0 59 ³⁹	5 12 10 ⁷⁹
Mon.	10	5 15 19 ⁷⁰	23 3 20 ⁵	15 47 ¹	0 47 ⁶⁵	5 16 7 ³⁵
Tues.	11	5 19 28 ²⁰	23 7 33 ³	15 47 ⁰	0 35 ⁷¹	5 20 3 ⁹¹
Wed.	12	5 23 36 ⁹⁰	23 11 21 ⁷	15 46 ⁹	0 23 ⁵⁷	5 24 0 ⁴⁷
Thur.	13	5 27 45 ⁷⁷	23 14 45 ⁵	15 46 ⁸	0 11 ²⁵	5 27 57 ⁰²
Frid.	14	5 31 54 ⁷⁹	23 17 44 ⁸	15 46 ⁷	0 1 ²¹	5 31 53 ⁵⁸
Sat.	15	5 36 3 ⁹⁵	23 20 19 ⁵	15 46 ⁶	0 13 ⁸¹	5 35 50 ¹⁴
Sun.	16	5 40 13 ²³	23 22 29 ⁶	15 46 ⁶	0 26 ⁵³	5 39 46 ⁷⁰
Mon.	17	5 44 22 ⁶¹	23 24 15 ⁰	15 46 ⁵	0 39 ³⁵	5 43 43 ²⁵
Tues.	18	5 48 32 ⁰⁶	23 25 35 ⁷	15 46 ⁴	0 52 ²⁵	5 47 39 ⁸¹
Wed.	19	5 52 41 ⁵⁷	23 26 31 ⁶	15 46 ⁴	1 5 ²⁰	5 51 36 ³⁷
Thur.	20	5 56 51 ¹¹	23 27 2 ⁸	15 46 ³	1 18 ¹⁹	5 55 32 ⁹³
Frid.	21	6 1 0 ⁶⁷	23 27 9 ¹	15 46 ²	1 31 ¹⁸	5 59 29 ⁴⁸
Sat.	22	6 5 10 ²¹	23 26 50 ⁷	15 46 ²	1 44 ¹⁷	6 3 26 ⁰⁴
Sun.	23	6 9 19 ⁷²	23 26 7 ⁵	15 46 ¹	1 57 ¹²	6 7 22 ⁶⁰
Mon.	24	6 13 29 ¹⁷	23 24 59 ⁵	15 46 ¹	2 10 ⁰¹	6 11 19 ¹⁶
Tues.	25	6 17 38 ⁵³	23 23 26 ⁸	15 46 ⁰	2 22 ⁸¹	6 15 15 ⁷¹
Wed.	26	6 21 47 ⁷⁷	23 21 29 ⁵	15 46 ⁰	2 35 ⁵⁰	6 19 12 ²⁷
Thur.	27	6 25 56 ⁸⁷	23 19 7 ⁵	15 46 ⁰	2 48 ⁰⁴	6 23 8 ⁸³
Frid.	28	6 30 5 ⁸¹	23 16 20 ⁹	15 46 ⁰	3 0 ⁴²	6 27 5 ³⁹
Sat.	29	6 34 14 ⁵⁴	23 13 9 ⁹	15 46 ⁰	3 12 ⁶⁰	6 31 1 ⁹⁵
Sun.	30	6 38 23 ⁰⁵	23 9 34 ⁵	15 45 ⁹	3 24 ⁵⁵	6 34 58 ⁵⁰
Mon.	31	6 42 31 ³²	N. 23° 5' 34 ⁷	15 45 ⁹	3 36 ²⁶	6 38 55 ⁰⁶

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
	^o ['] ["]	[°] ['] ["]		^h ^m ^s	['] ["]	['] ["]	['] ["]	['] ["]
1	71 7 32.3	S. 0° 19'	0.0062553	19 16 11.73	14 44.9	14 46.2	54 2.1	54 6.9
2	72 5 0.2	S. 0° 08'	0.0063141	19 12 15.82	14 48.0	14 50.3	54 13.4	54 21.8
3	73 2 27.1	N. 0° 03'	0.0063707	19 8 19.91	14 53.1	14 56.5	54 32.1	54 44.4
4	73 59 52.7	0° 13'	0.0064251	19 4 24.00	15 0.4	15 4.9	54 58.8	55 15.3
5	74 57 17.3	0° 22'	0.0064774	19 0 28.09	15 10.0	15 15.6	55 33.9	55 54.4
6	75 54 40.6	0° 30'	0.0065276	18 56 32.18	15 21.7	15 28.4	56 17.0	56 41.3
7	76 52 2.9	0° 35'	0.0065759	18 52 36.27	15 35.4	15 42.9	57 7.2	57 34.4
8	77 49 24.0	0° 37'	0.0066225	18 48 40.35	15 50.5	15 58.3	58 2.4	58 30.9
9	78 46 44.1	0° 37'	0.0066673	18 44 44.44	16 6.0	16 13.6	58 59.3	59 27.0
10	79 44 3.2	0° 34'	0.0067106	18 40 48.53	16 20.8	16 27.4	59 53.2	60 17.4
11	80 41 21.5	0° 27'	0.0067524	18 36 52.62	16 33.2	16 38.1	60 38.7	60 56.6
12	81 38 38.9	0° 16'	0.0067930	18 32 56.71	16 41.8	16 44.3	61 10.3	61 19.5
13	82 35 55.7	N. 0° 03'	0.0068323	18 29 0.80	16 45.5	16 45.3	61 23.8	61 23.0
14	83 33 11.8	S. 0° 11'	0.0068704	18 25 4.88	16 43.7	16 40.8	61 17.2	61 6.6
15	84 30 27.5	0° 26'	0.0069071	18 21 8.97	16 36.7	16 31.5	60 51.5	60 32.6
16	85 27 42.7	0° 41'	0.0069425	18 17 13.06	16 25.5	16 18.7	60 10.5	59 45.8
17	86 24 57.5	0° 54'	0.0069764	18 13 17.15	16 11.5	16 4.0	59 19.3	58 51.7
18	87 22 12.1	0° 64'	0.0070087	18 9 21.24	15 56.3	15 48.6	58 23.5	57 55.4
19	88 19 26.5	0° 71'	0.0070393	18 5 25.33	15 41.1	15 33.8	57 27.8	57 1.3
20	89 16 40.7	0° 75'	0.0070680	18 1 29.41	15 27.0	15 20.5	56 36.1	56 12.5
21	90 13 54.8	0° 77'	0.0070948	17 57 33.50	15 14.6	15 9.1	55 50.7	55 30.8
22	91 11 8.9	0° 76'	0.0071193	17 53 37.59	15 4.3	14 59.9	55 12.9	54 57.0
23	92 8 22.9	0° 72'	0.0071414	17 49 41.68	14 56.1	14 52.9	54 43.2	54 31.2
24	93 5 36.9	0° 66'	0.0071613	17 45 45.77	14 50.1	14 47.9	54 21.2	54 13.0
25	94 2 50.8	0° 58'	0.0071788	17 41 49.86	14 46.2	14 44.8	54 6.6	54 1.8
26	95 0 4.6	0° 48'	0.0071937	17 37 53.94	14 44.0	14 43.5	53 58.6	53 56.9
27	95 57 18.3	0° 38'	0.0072060	17 33 58.03	14 43.4	14 43.8	53 56.6	53 57.8
28	96 54 31.9	0° 27'	0.0072159	17 30 2.12	14 44.4	14 45.4	54 0.2	54 4.0
29	97 51 45.4	0° 15'	0.0072231	17 26 6.21	14 46.8	14 48.6	54 9.0	54 15.4
30	98 48 58.7	S. 0° 04'	0.0072278	17 22 10.30	14 50.7	14 53.1	54 23.1	54 32.2
31	99 46 11.8	N. 0° 07'	0.0072300	17 18 14.38	14 56.0	14 59.3	54 42.7	54 54.7

MEAN TIME.

THE MOON'S

Day of the Month.	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.		Upper.	Lower.
	^h ^m ^s	^h ^m ^s	[°] ['] ["]	[°] ['] ["]		^h ^m	^h ^m
1	101 15 7.6	107 9 11.8	S. 0 5 35.2	N. 0 26 46.5	2.8	2 12.6	14 37.2
2	113 4 12.4	119 0 35.8	N. 0 58 57.7	1 30 39.4	3.8	3 1.7	15 26.1
3	124 58 50.4	130 59 26.1	2 1 32.6	2 31 18.0	4.8	3 50.4	16 14.4
4	137 2 54.8	143 9 49.0	2 59 36.7	3 26 8.9	5.8	4 38.2	17 1.8
5	149 20 41.8	155 36 6.7	3 50 34.9	4 12 34.5	6.8	5 25.2	17 48.5
6	161 56 35.9	168 22 39.9	4 31 47.6	4 47 53.7	7.8	6 11.7	18 34.8
7	174 54 46.9	181 33 20.5	5 0 32.3	5 9 23.8	8.8	6 58.1	19 21.7
8	188 18 38.9	195 10 53.9	5 14 9.5	5 14 32.5	9.8	7 45.5	20 9.9
9	202 10 8.5	209 16 16.6	5 10 18.6	5 1 17.7	10.8	8 34.8	21 0.6
10	216 29 1.6	223 47 55.3	4 47 24.6	4 28 40.3	11.8	9 27.1	21 54.7
11	231 12 18.6	238 41 21.4	4 5 13.4	3 37 20.4	12.8	10 23.3	22 53.0
12	246 14 4.2	253 49 20.1	3 5 26.3	2 30 4.0	13.8	11 23.6	23 55.0
13	261 25 57.0	269 2 40.3	1 51 53.9	N. 1 11 41.9	14.8	12 27.1	* *
14	276 38 16.3	284 11 34.7	N. 0 30 17.8	S. 0 11 27.2	15.8	13 31.8	0 59.5
15	291 41 31.3	299 7 9.5	S. 0 52 43.0	1 32 42.2	16.8	14 35.0	2 3.7
16	306 27 43.0	313 42 34.6	2 10 42.2	2 46 5.8	17.8	15 34.6	3 5.3
17	320 51 18.2	327 53 38.1	3 18 22.8	3 47 9.5	18.8	16 29.6	4 2.7
18	334 49 26.9	341 38 46.4	4 12 8.4	4 33 7.9	19.8	17 20.3	4 55.4
19	348 21 45.0	354 58 37.2	4 50 1.6	5 2 47.1	20.8	18 7.4	5 44.2
20	1 29 41.9	7 55 21.5	5 11 25.9	5 16 2.0	21.8	18 52.1	6 30.0
21	14 16 0.8	20 32 6.3	5 16 42.0	5 13 34.0	22.8	19 35.5	7 13.9
22	26 44 5.1	32 52 24.6	5 6 47.6	4 56 33.8	23.8	20 18.6	7 57.0
23	38 57 31.6	44 59 52.3	4 43 4.0	4 26 30.9	24.8	21 2.1	8 40.2
24	50 59 52.0	56 57 54.9	4 7 7.8	3 45 8.9	25.8	21 46.8	9 24.3
25	62 54 23.5	68 49 38.8	3 20 49.0	2 54 23.7	26.8	22 32.9	10 9.7
26	74 44 2.1	80 37 52.3	2 26 9.7	1 56 23.6	27.8	23 20.6	10 56.6
27	86 31 27.5	92 25 5.7	1 25 23.7	S. 0 53 28.0	28.8	* *	11 44.8
28	98 19 4.1	104 13 39.7	S. 0 20 55.5	N. 0 11 54.3	0.1	0 9.3	12 33.9
29	110 9 9.4	116 5 50.8	N. 0 44 41.7	1 17 6.5	1.1	0 58.6	13 23.2
30	122 4 1.3	128 3 59.3	1 48 49.0	2 19 28.6	2.1	1 47.6	14 11.8
31	134 6 3.8	140 10 34.9	N. 2 48 45.6	N. 3 16 19.9	3.1	2 35.8	14 59.5

The Moon's Longitude and Latitude are from HANSEN'S Tables direct; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 1.					MONDAY 3.				
0	6 48 53.50	21.419	N.22 52 59.5	2.03	0	8 31 24.55	21.163	N.20 59 51.9	48.58
1	6 51 2.03	21.423	22 53 8.4	0.94	1	8 33 31.49	21.151	20 54 57.4	49.58
2	6 53 10.57	21.426	22 53 10.8	0.13	2	8 35 38.36	21.138	20 49 56.9	50.58
3	6 55 19.14	21.429	22 53 6.8	1.20	3	8 37 45.14	21.124	20 44 50.4	51.58
4	6 57 27.72	21.431	22 52 56.4	2.28	4	8 39 51.85	21.112	20 39 37.9	52.58
5	6 59 36.31	21.433	22 52 39.5	3.36	5	8 41 58.48	21.098	20 34 19.5	53.56
6	7 1 44.92	21.435	22 52 16.1	4.43	6	8 44 5.03	21.085	20 28 55.2	54.54
7	7 3 53.53	21.435	22 51 46.3	5.51	7	8 46 11.50	21.072	20 23 25.0	55.53
8	7 6 2.14	21.436	22 51 10.0	6.58	8	8 48 17.89	21.058	20 17 48.9	56.50
9	7 8 10.76	21.437	22 50 27.3	7.66	9	8 50 24.20	21.045	20 12 7.0	57.47
10	7 10 19.38	21.436	22 49 38.1	8.73	10	8 52 30.43	21.031	20 6 19.3	58.43
11	7 12 27.99	21.435	22 48 42.5	9.80	11	8 54 36.57	21.017	20 0 25.8	59.41
12	7 14 36.60	21.435	22 47 40.5	10.88	12	8 56 42.63	21.002	19 54 26.4	60.38
13	7 16 45.20	21.433	22 46 32.0	11.95	13	8 58 48.60	20.988	19 48 21.3	61.33
14	7 18 53.80	21.432	22 45 17.1	13.03	14	9 0 54.49	20.975	19 42 10.5	62.28
15	7 21 2.38	21.429	22 43 55.7	14.10	15	9 3 0.30	20.961	19 35 54.0	63.23
16	7 23 10.95	21.427	22 42 27.9	15.18	16	9 5 6.02	20.946	19 29 31.8	64.18
17	7 25 19.50	21.423	22 40 53.6	16.24	17	9 7 11.65	20.931	19 23 3.9	65.12
18	7 27 28.03	21.420	22 39 13.0	17.31	18	9 9 17.19	20.917	19 16 30.4	66.05
19	7 29 36.54	21.416	22 37 25.9	18.39	19	9 11 22.65	20.903	19 9 51.3	66.98
20	7 31 45.02	21.412	22 35 32.3	19.46	20	9 13 28.03	20.889	19 3 6.6	67.91
21	7 33 53.48	21.408	22 33 32.4	20.52	21	9 15 33.32	20.874	18 56 16.4	68.83
22	7 36 1.91	21.403	22 31 26.1	21.58	22	9 17 38.52	20.859	18 49 20.6	69.76
23	7 38 10.31	21.397	N.22 29 13.4	22.65	23	9 19 43.63	20.845	N.18 42 19.3	70.67
SUNDAY 2.					TUESDAY 4.				
0	7 40 18.67	21.391	N.22 26 54.3	23.72	0	9 21 48.66	20.831	N.18 35 12.6	71.58
1	7 42 27.00	21.386	22 24 28.8	24.78	1	9 23 53.60	20.817	18 28 0.4	72.48
2	7 44 35.30	21.379	22 21 57.0	25.83	2	9 25 58.46	20.803	18 20 42.8	73.39
3	7 46 43.55	21.373	22 19 18.8	26.89	3	9 28 3.23	20.788	18 13 19.7	74.29
4	7 48 51.77	21.366	22 16 34.3	27.94	4	9 30 7.92	20.775	18 5 51.3	75.18
5	7 50 59.94	21.358	22 13 43.5	29.00	5	9 32 12.53	20.761	17 58 17.6	76.06
6	7 53 8.06	21.350	22 10 46.3	30.06	6	9 34 17.05	20.746	17 50 38.6	76.94
7	7 55 16.14	21.343	22 7 42.8	31.10	7	9 36 21.48	20.732	17 42 54.3	77.83
8	7 57 24.17	21.334	22 4 33.1	32.15	8	9 38 25.83	20.718	17 35 4.7	78.69
9	7 59 32.15	21.326	22 1 17.0	33.21	9	9 40 30.10	20.705	17 27 10.0	79.56
10	8 1 40.08	21.317	21 57 54.6	34.25	10	9 42 34.29	20.691	17 19 10.0	80.43
11	8 3 47.95	21.307	21 54 26.0	35.28	11	9 44 38.39	20.677	17 11 4.9	81.28
12	8 5 55.76	21.298	21 50 51.2	36.33	12	9 46 42.41	20.664	17 2 54.6	82.14
13	8 8 3.52	21.288	21 47 10.1	37.37	13	9 48 46.36	20.651	16 54 39.2	82.98
14	8 10 11.21	21.278	21 43 22.8	38.39	14	9 50 50.22	20.638	16 46 18.8	83.82
15	8 12 18.85	21.268	21 39 29.4	39.43	15	9 52 54.01	20.625	16 37 53.4	84.66
16	8 14 26.42	21.257	21 35 29.7	40.46	16	9 54 57.72	20.613	16 29 22.9	85.50
17	8 16 33.93	21.246	21 31 23.9	41.48	17	9 57 1.36	20.601	16 20 47.4	86.33
18	8 18 41.37	21.234	21 27 11.9	42.51	18	9 59 4.93	20.588	16 12 7.0	87.14
19	8 20 48.74	21.223	21 22 53.8	43.53	19	10 1 8.42	20.576	16 3 21.7	87.96
20	8 22 56.05	21.212	21 18 29.5	44.55	20	10 3 11.84	20.563	15 54 31.5	88.78
21	8 25 3.28	21.200	21 13 59.2	45.56	21	10 5 15.18	20.552	15 45 36.4	89.58
22	8 27 10.45	21.188	21 9 22.8	46.57	22	10 7 18.46	20.541	15 36 36.5	90.38
23	8 29 17.54	21.175	21 4 40.4	47.58	23	10 9 21.67	20.530	15 27 31.8	91.18
24	8 31 24.55	21.163	N.20 59 51.9	48.58	24	10 11 24.82	20.519	N.15 18 22.4	91.96

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 5.					FRIDAY 7.				
0	10 11 24.82	20.519	N. 15 18 22.4	91.96	0	11 49 18.02	20.435	N. 6 37 11.9	122.70
1	10 13 27.90	20.508	15 9 8.3	92.75	1	11 51 20.66	20.444	6 24 54.3	123.17
2	10 15 30.92	20.498	14 59 49.4	93.53	2	11 53 23.35	20.455	6 12 33.9	123.63
3	10 17 33.88	20.488	14 50 25.9	94.30	3	11 55 26.12	20.467	6 0 10.8	124.08
4	10 19 36.77	20.478	14 40 57.8	95.07	4	11 57 28.95	20.478	5 47 44.9	124.53
5	10 21 39.61	20.469	14 31 25.1	95.83	5	11 59 31.86	20.492	5 35 16.4	124.97
6	10 23 42.39	20.459	14 21 47.8	96.59	6	12 1 34.85	20.504	5 22 45.3	125.40
7	10 25 45.12	20.450	14 12 6.0	97.34	7	12 3 37.91	20.518	5 10 11.6	125.83
8	10 27 47.79	20.441	14 2 19.7	98.09	8	12 5 41.06	20.533	4 57 35.4	126.23
9	10 29 50.41	20.433	13 52 28.9	98.83	9	12 7 44.30	20.548	4 44 56.8	126.63
10	10 31 52.98	20.425	13 42 33.7	99.56	10	12 9 47.63	20.563	4 32 15.8	127.03
11	10 33 55.51	20.418	13 32 34.2	100.29	11	12 11 51.06	20.580	4 19 32.4	127.43
12	10 35 57.99	20.410	13 22 30.2	101.02	12	12 13 54.59	20.597	4 6 46.7	127.80
13	10 38 0.43	20.403	13 12 22.0	101.73	13	12 15 58.22	20.614	3 53 58.8	128.17
14	10 40 2.82	20.396	13 2 9.5	102.43	14	12 18 1.96	20.633	3 41 8.7	128.53
15	10 42 5.18	20.390	12 51 52.8	103.14	15	12 20 5.81	20.651	3 28 16.4	128.88
16	10 44 7.50	20.384	12 41 31.8	103.84	16	12 22 9.77	20.670	3 15 22.1	129.22
17	10 46 9.79	20.379	12 31 6.7	104.53	17	12 24 13.85	20.691	3 2 25.8	129.56
18	10 48 12.05	20.373	12 20 37.5	105.22	18	12 26 18.06	20.712	2 49 27.4	129.88
19	10 50 14.27	20.368	12 10 4.1	105.90	19	12 28 22.39	20.733	2 36 27.2	130.19
20	10 52 16.47	20.365	11 59 26.7	106.57	20	12 30 26.85	20.754	2 23 25.1	130.50
21	10 54 18.65	20.361	11 48 45.3	107.23	21	12 32 31.44	20.778	2 10 21.2	130.80
22	10 56 20.80	20.357	11 37 59.9	107.89	22	12 34 36.18	20.801	1 57 15.5	131.08
23	10 58 22.93	20.354	N. 11 27 10.6	108.55	23	12 36 41.05	20.824	N. 1 44 8.2	131.36
THURSDAY 6.					SATURDAY 8.				
0	11 0 25.05	20.352	N. 11 16 17.3	109.20	0	12 38 46.07	20.849	N. 1 30 59.2	131.63
1	11 2 27.15	20.349	11 5 20.2	109.83	1	12 40 51.24	20.875	1 17 48.7	131.88
2	11 4 29.24	20.348	10 54 19.3	110.48	2	12 42 56.57	20.902	1 4 36.7	132.13
3	11 6 31.32	20.346	10 43 14.5	111.11	3	12 45 2.06	20.928	0 51 23.2	132.37
4	11 8 33.39	20.345	10 32 6.0	111.73	4	12 47 7.71	20.955	0 38 8.3	132.59
5	11 10 35.46	20.344	10 20 53.8	112.34	5	12 49 13.52	20.983	0 24 52.1	132.80
6	11 12 37.52	20.344	10 9 37.9	112.95	6	12 51 19.51	21.013	N. 0 11 34.7	133.00
7	11 14 39.59	20.346	9 58 18.4	113.55	7	12 53 25.67	21.042	S. 0 1 43.9	133.20
8	11 16 41.67	20.347	9 46 55.3	114.14	8	12 55 32.01	21.072	0 15 3.7	133.38
9	11 18 43.75	20.348	9 35 28.7	114.73	9	12 57 38.53	21.103	0 28 24.5	133.55
10	11 20 45.84	20.350	9 23 58.5	115.32	10	12 59 45.24	21.134	0 41 46.3	133.71
11	11 22 47.95	20.353	9 12 24.9	115.88	11	13 1 52.14	21.167	0 55 9.0	133.86
12	11 24 50.07	20.355	9 0 47.9	116.45	12	13 3 59.24	21.200	1 8 32.6	134.00
13	11 26 52.21	20.359	8 49 7.5	117.02	13	13 6 6.54	21.233	1 21 57.0	134.13
14	11 28 54.38	20.363	8 37 23.7	117.57	14	13 8 14.03	21.267	1 35 22.1	134.23
15	11 30 56.57	20.368	8 25 36.7	118.11	15	13 10 21.74	21.303	1 48 47.8	134.33
16	11 32 58.79	20.373	8 13 46.4	118.66	16	13 12 29.66	21.338	2 2 14.1	134.43
17	11 35 1.05	20.379	8 1 52.8	119.19	17	13 14 37.79	21.374	2 15 40.9	134.51
18	11 37 3.34	20.385	7 49 56.1	119.71	18	13 16 46.15	21.412	2 29 8.2	134.58
19	11 39 5.67	20.392	7 37 56.3	120.23	19	13 18 54.73	21.448	2 42 35.9	134.63
20	11 41 8.04	20.399	7 25 53.4	120.74	20	13 21 3.53	21.487	2 56 3.8	134.67
21	11 43 10.46	20.407	7 13 47.4	121.24	21	13 23 12.57	21.527	3 9 31.9	134.70
22	11 45 12.92	20.415	7 1 38.5	121.73	22	13 25 21.85	21.568	3 23 0.2	134.72
23	11 47 15.44	20.423	6 49 26.7	122.22	23	13 27 31.36	21.606	3 36 28.5	134.72
24	11 49 18.02	20.435	N. 6 37 11.9	122.70	24	13 29 41.12	21.648	S. 3 49 56.8	134.71

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 9.					TUESDAY 11.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	13 29 41.12	21.648	S. 3 49 56.8	134.71	0	15 19 29.41	24.298	S. 14 7 20.7	116.23
1	13 31 51.13	21.689	4 3 25.0	134.68	1	15 21 55.39	24.362	14 18 55.7	115.42
2	13 34 1.39	21.731	4 16 53.0	134.65	2	15 24 21.75	24.426	14 30 25.7	114.58
3	13 36 11.90	21.774	4 30 20.8	134.60	3	15 26 48.50	24.492	14 41 50.7	113.74
4	13 38 22.68	21.819	4 43 48.2	134.53	4	15 29 15.65	24.557	14 53 10.6	112.88
5	13 40 33.73	21.863	4 57 15.2	134.47	5	15 31 43.18	24.621	15 4 25.2	111.98
6	13 42 45.04	21.908	5 10 41.8	134.38	6	15 34 11.10	24.686	15 15 34.4	111.08
7	13 44 56.62	21.953	5 24 7.7	134.26	7	15 36 39.41	24.751	15 26 38.2	110.16
8	13 47 8.48	22.000	5 37 32.9	134.14	8	15 39 8.11	24.816	15 37 36.3	109.21
9	13 49 20.62	22.048	5 50 57.4	134.02	9	15 41 37.20	24.881	15 48 28.7	108.25
10	13 51 33.05	22.095	6 4 21.1	133.87	10	15 44 6.68	24.946	15 59 15.3	107.28
11	13 53 45.76	22.143	6 17 43.8	133.70	11	15 46 36.55	25.010	16 9 56.0	106.28
12	13 55 58.77	22.193	6 31 5.5	133.53	12	15 49 6.80	25.074	16 20 30.6	105.25
13	13 58 12.07	22.242	6 44 26.1	133.33	13	15 51 37.44	25.138	16 30 59.0	104.22
14	14 0 25.67	22.293	6 57 45.5	133.13	14	15 54 8.46	25.203	16 41 21.2	103.16
15	14 2 39.58	22.344	7 11 3.6	132.90	15	15 56 39.87	25.267	16 51 36.9	102.08
16	14 4 53.80	22.395	7 24 20.3	132.67	16	15 59 11.66	25.330	17 1 46.1	100.98
17	14 7 8.32	22.447	7 37 35.6	132.42	17	16 1 43.83	25.393	17 11 48.7	99.88
18	14 9 23.16	22.499	7 50 49.3	132.14	18	16 4 16.38	25.456	17 21 44.6	98.75
19	14 11 38.31	22.553	8 4 1.3	131.86	19	16 6 49.30	25.518	17 31 33.7	97.60
20	14 13 53.79	22.607	8 17 11.6	131.57	20	16 9 22.60	25.581	17 41 15.8	96.43
21	14 16 9.59	22.660	8 30 20.1	131.25	21	16 11 56.27	25.643	17 50 50.8	95.23
22	14 18 25.71	22.715	8 43 26.6	130.92	22	16 14 30.31	25.704	18 0 18.6	94.03
23	14 20 42.17	22.771	S. 8 56 31.1	130.57	23	16 17 4.72	25.764	S. 18 9 39.2	92.81
MONDAY 10.					WEDNESDAY 12.				
0	14 22 58.96	22.827	S. 9 9 33.4	130.20	0	16 19 39.48	25.824	S. 18 18 52.3	91.57
1	14 25 16.09	22.883	9 22 33.5	129.83	1	16 22 14.61	25.884	18 27 58.0	90.31
2	14 27 33.56	22.940	9 35 31.3	129.43	2	16 24 50.09	25.943	18 36 56.0	89.03
3	14 29 51.37	22.998	9 48 26.6	129.01	3	16 27 25.93	26.002	18 45 46.4	87.74
4	14 32 9.53	23.057	10 1 19.4	128.58	4	16 30 2.11	26.059	18 54 28.9	86.43
5	14 34 28.05	23.115	10 14 9.6	128.13	5	16 32 38.64	26.117	19 3 3.6	85.11
6	14 36 46.91	23.173	10 26 57.0	127.67	6	16 35 15.51	26.173	19 11 30.2	83.76
7	14 39 6.12	23.233	10 39 41.6	127.18	7	16 37 52.72	26.229	19 19 48.7	82.40
8	14 41 25.70	23.293	10 52 23.2	126.68	8	16 40 30.26	26.283	19 27 59.0	81.02
9	14 43 45.64	23.353	11 5 1.8	126.17	9	16 43 8.12	26.338	19 36 0.9	79.63
10	14 46 5.94	23.413	11 17 37.2	125.63	10	16 45 46.31	26.391	19 43 54.5	78.23
11	14 48 26.60	23.474	11 30 9.4	125.08	11	16 48 24.81	26.443	19 51 39.6	76.79
12	14 50 47.63	23.536	11 42 38.1	124.50	12	16 51 3.62	26.494	19 59 16.0	75.35
13	14 53 9.03	23.598	11 55 3.4	123.92	13	16 53 42.74	26.544	20 6 43.8	73.89
14	14 55 30.80	23.660	12 7 25.1	123.31	14	16 56 22.15	26.593	20 14 2.7	72.42
15	14 57 52.95	23.723	12 19 43.1	122.68	15	16 59 1.86	26.643	20 21 12.8	70.93
16	15 0 15.48	23.786	12 31 57.3	122.04	16	17 1 41.86	26.690	20 28 13.9	69.43
17	15 2 38.38	23.849	12 44 7.6	121.38	17	17 4 22.14	26.736	20 35 6.0	67.92
18	15 5 1.67	23.913	12 56 13.9	120.70	18	17 7 2.69	26.780	20 41 48.9	66.38
19	15 7 25.33	23.976	13 8 16.0	120.00	19	17 9 43.50	26.824	20 48 22.6	64.83
20	15 9 49.38	24.040	13 20 13.9	119.28	20	17 12 24.58	26.868	20 54 46.9	63.28
21	15 12 13.81	24.103	13 32 7.4	118.55	21	17 15 5.91	26.909	21 1 1.9	61.72
22	15 14 38.62	24.168	13 43 56.5	117.79	22	17 17 47.49	26.950	21 7 7.5	60.13
23	15 17 3.82	24.233	13 55 40.9	117.02	23	17 20 29.31	26.988	21 13 3.5	58.53
24	15 19 29.41	24.298	S. 14 7 20.7	116.23	24	17 23 11.35	27.026	S. 21 18 49.9	56.93

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 13.					SATURDAY 15.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	17 23 11.35	27.026	S. 21 18 49.9	56.93	0	19 34 20.83	26.993	S. 22 34 18.4	25.93
1	17 25 53.62	27.063	21 24 26.6	55.31	1	19 37 2.67	26.953	22 31 37.9	27.58
2	17 28 36.10	27.098	21 29 53.6	53.68	2	19 39 44.26	26.911	22 28 47.4	29.23
3	17 31 18.79	27.132	21 35 10.8	52.04	3	19 42 25.60	26.868	22 25 47.1	30.88
4	17 34 1.68	27.164	21 40 18.1	50.39	4	19 45 6.68	26.824	22 22 36.9	32.51
5	17 36 44.76	27.195	21 45 15.5	48.73	5	19 47 47.49	26.779	22 19 17.0	34.13
6	17 39 28.02	27.224	21 50 2.9	47.06	6	19 50 28.03	26.732	22 15 47.4	35.73
7	17 42 11.45	27.252	21 54 40.2	45.38	7	19 53 8.28	26.683	22 12 8.2	37.34
8	17 44 55.04	27.278	21 59 7.4	43.69	8	19 55 48.23	26.634	22 8 19.3	38.93
9	17 47 38.79	27.303	22 3 24.5	41.99	9	19 58 27.89	26.584	22 4 21.0	40.50
10	17 50 22.68	27.327	22 7 31.3	40.28	10	20 1 7.24	26.533	22 0 13.3	42.07
11	17 53 6.71	27.349	22 11 27.9	38.58	11	20 3 46.28	26.479	21 55 56.2	43.63
12	17 55 50.87	27.369	22 15 14.2	36.86	12	20 6 24.99	26.425	21 51 29.8	45.17
13	17 58 35.14	27.388	22 18 50.2	35.13	13	20 9 3.38	26.370	21 46 54.2	46.68
14	18 1 19.52	27.405	22 22 15.8	33.40	14	20 11 41.43	26.314	21 42 9.6	48.19
15	18 4 4.00	27.421	22 25 31.0	31.66	15	20 14 19.15	26.258	21 37 15.9	49.70
16	18 6 48.57	27.434	22 28 35.7	29.92	16	20 16 56.52	26.199	21 32 13.2	51.19
17	18 9 33.21	27.447	22 31 30.0	28.18	17	20 19 33.54	26.140	21 27 1.6	52.66
18	18 12 17.93	27.458	22 34 13.8	26.42	18	20 22 10.20	26.080	21 21 41.3	54.11
19	18 15 2.70	27.466	22 36 47.0	24.66	19	20 24 46.50	26.019	21 16 12.3	55.55
20	18 17 47.52	27.473	22 39 9.7	22.90	20	20 27 22.43	25.958	21 10 34.7	56.98
21	18 20 32.38	27.479	22 41 21.8	21.14	21	20 29 57.99	25.896	21 4 48.5	58.41
22	18 23 17.27	27.483	22 43 23.4	19.38	22	20 32 33.18	25.833	20 58 53.8	59.81
23	18 26 2.17	27.485	S. 22 45 14.3	17.60	23	20 35 7.98	25.768	S. 20 52 50.8	61.18
FRIDAY 14.					SUNDAY 16.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	18 28 47.09	27.486	S. 22 46 54.6	15.83	0	20 37 42.39	25.703	S. 20 46 39.6	62.55
1	18 31 32.00	27.483	22 48 24.3	14.06	1	20 40 16.41	25.637	20 40 20.2	63.90
2	18 34 16.89	27.480	22 49 43.3	12.29	2	20 42 50.03	25.571	20 33 52.8	65.24
3	18 37 1.76	27.476	22 50 51.8	10.53	3	20 45 23.26	25.505	20 27 17.3	66.57
4	18 39 46.60	27.469	22 51 49.6	8.75	4	20 47 56.09	25.438	20 20 34.0	67.87
5	18 42 31.39	27.461	22 52 36.8	6.98	5	20 50 28.51	25.369	20 13 42.9	69.16
6	18 45 16.13	27.452	22 53 13.3	5.21	6	20 53 0.52	25.300	20 6 44.1	70.43
7	18 48 0.81	27.440	22 53 39.3	3.44	7	20 55 32.11	25.231	19 59 37.7	71.69
8	18 50 45.41	27.427	22 53 54.6	1.68	8	20 58 3.29	25.163	19 52 23.8	72.93
9	18 53 29.93	27.413	22 53 59.4	0.08	9	21 0 34.06	25.093	19 45 2.5	74.16
10	18 56 14.36	27.396	22 53 53.6	1.84	10	21 3 4.41	25.023	19 37 33.9	75.38
11	18 58 58.88	27.377	22 53 37.3	3.60	11	21 5 34.33	24.952	19 29 58.0	76.58
12	19 1 42.68	27.357	22 53 10.4	5.36	12	21 8 3.88	24.881	19 22 15.0	77.74
13	19 4 26.96	27.335	22 52 33.0	7.11	13	21 10 32.90	24.810	19 14 25.1	78.90
14	19 7 10.90	27.312	22 51 45.1	8.85	14	21 13 1.55	24.738	19 6 28.2	80.04
15	19 9 54.70	27.288	22 50 46.8	10.58	15	21 15 29.76	24.667	18 58 24.6	81.17
16	19 12 38.35	27.261	22 49 38.1	12.32	16	21 17 57.55	24.595	18 50 14.2	82.28
17	19 15 21.83	27.233	22 48 19.0	14.04	17	21 20 24.90	24.523	18 41 57.2	83.38
18	19 18 5.14	27.203	22 46 49.6	15.76	18	21 22 51.82	24.451	18 33 33.7	84.45
19	19 20 48.26	27.171	22 45 9.9	17.48	19	21 25 18.31	24.378	18 25 3.8	85.52
20	19 23 31.19	27.138	22 43 19.9	19.18	20	21 27 44.36	24.306	18 16 27.5	86.57
21	19 26 13.92	27.105	22 41 19.8	20.87	21	21 30 9.98	24.233	18 7 45.0	87.59
22	19 28 56.45	27.069	22 39 9.5	22.57	22	21 32 35.16	24.161	17 58 56.4	88.60
23	19 31 38.75	27.032	22 36 49.0	24.26	23	21 34 59.91	24.088	17 50 1.8	89.60
24	19 34 20.83	26.993	S. 22 34 18.4	25.93	24	21 37 24.22	24.016	S. 17 41 1.2	90.58

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 17.					WEDNESDAY 19.				
0	21 37 24.22	24.016	S. 17 41 1.2	90.58	0	23 24 50.06	20.925	S. 9 3 7.3	119.71
1	21 39 48.10	23.944	17 31 54.9	91.53	1	23 26 55.46	20.874	8 51 8.2	119.99
2	21 42 11.54	23.871	17 22 42.8	92.48	2	23 29 0.55	20.824	8 39 7.4	120.26
3	21 44 34.55	23.798	17 13 25.1	93.42	3	23 31 5.35	20.775	8 27 5.1	120.52
4	21 46 57.12	23.726	17 4 1.8	94.33	4	23 33 9.85	20.726	8 15 1.2	120.77
5	21 49 19.26	23.654	16 54 33.2	95.22	5	23 35 14.06	20.678	8 2 55.9	120.99
6	21 51 40.97	23.582	16 44 59.2	96.10	6	23 37 17.99	20.631	7 50 49.3	121.22
7	21 54 2.24	23.510	16 35 20.0	96.97	7	23 39 21.63	20.584	7 38 41.3	121.43
8	21 56 23.09	23.439	16 25 35.6	97.82	8	23 41 25.00	20.538	7 26 32.1	121.63
9	21 58 43.51	23.368	16 15 46.2	98.65	9	23 43 28.09	20.493	7 14 21.7	121.83
10	22 1 3.50	23.297	16 5 51.8	99.47	10	23 45 30.91	20.448	7 2 10.2	122.01
11	22 3 23.07	23.226	15 55 52.6	100.27	11	23 47 33.47	20.404	6 49 57.6	122.18
12	22 5 42.21	23.155	15 45 48.6	101.05	12	23 49 35.76	20.361	6 37 44.0	122.34
13	22 8 0.93	23.084	15 35 40.0	101.82	13	23 51 37.80	20.319	6 25 29.5	122.49
14	22 10 19.22	23.014	15 25 26.8	102.58	14	23 53 39.59	20.278	6 13 14.1	122.63
15	22 12 37.10	22.945	15 15 9.1	103.31	15	23 55 41.13	20.237	6 0 57.9	122.76
16	22 14 54.56	22.875	15 4 47.1	104.03	16	23 57 42.43	20.196	5 48 41.0	122.88
17	22 17 11.60	22.806	14 54 20.8	104.74	17	23 59 43.48	20.156	5 36 23.4	122.99
18	22 19 28.23	22.738	14 43 50.2	105.43	18	0 1 44.30	20.118	5 24 5.1	123.09
19	22 21 44.45	22.670	14 33 15.6	106.10	19	0 3 44.90	20.080	5 11 46.3	123.18
20	22 24 0.27	22.603	14 22 37.0	106.77	20	0 5 45.26	20.042	4 59 26.9	123.27
21	22 26 15.68	22.534	14 11 54.4	107.42	21	0 7 45.40	20.006	4 47 7.1	123.33
22	22 28 30.68	22.468	14 1 8.0	108.05	22	0 9 45.33	19.970	4 34 46.9	123.40
23	22 30 45.29	22.402	S. 13 50 17.8	108.68	23	0 11 45.04	19.934	S. 4 22 26.3	123.46
TUESDAY 18.					THURSDAY 20.				
0	22 32 59.50	22.336	S. 13 39 23.9	109.28	0	0 13 44.54	19.900	S. 4 10 5.4	123.50
1	22 35 13.32	22.270	13 28 26.5	109.86	1	0 15 43.84	19.867	3 57 44.3	123.53
2	22 37 26.74	22.205	13 17 25.6	110.44	2	0 17 42.94	19.833	3 45 23.0	123.57
3	22 39 39.78	22.142	13 6 21.2	111.00	3	0 19 41.84	19.801	3 33 1.5	123.58
4	22 41 52.44	22.078	12 55 13.6	111.54	4	0 21 40.55	19.769	3 20 40.0	123.59
5	22 44 4.71	22.014	12 44 2.7	112.08	5	0 23 39.07	19.738	3 8 18.4	123.60
6	22 46 16.61	21.952	12 32 48.7	112.59	6	0 25 37.41	19.708	2 55 56.8	123.59
7	22 48 28.13	21.889	12 21 31.6	113.10	7	0 27 35.57	19.678	2 43 35.3	123.57
8	22 50 39.28	21.828	12 10 11.5	113.59	8	0 29 33.55	19.649	2 31 14.0	123.54
9	22 52 50.06	21.766	11 58 48.5	114.08	9	0 31 31.36	19.622	2 18 52.8	123.52
10	22 55 0.47	21.706	11 47 22.6	114.54	10	0 33 29.01	19.594	2 6 31.8	123.48
11	22 57 10.53	21.646	11 35 54.0	114.98	11	0 35 26.49	19.567	1 54 11.1	123.42
12	22 59 20.22	21.586	11 24 22.8	115.42	12	0 37 23.81	19.541	1 41 50.8	123.36
13	23 1 29.56	21.528	11 12 49.0	115.85	13	0 39 20.98	19.516	1 29 30.8	123.30
14	23 3 38.56	21.471	11 1 12.6	116.27	14	0 41 18.00	19.492	1 17 11.2	123.23
15	23 5 47.21	21.413	10 49 33.8	116.66	15	0 43 14.88	19.468	1 4 52.1	123.14
16	23 7 55.51	21.356	10 37 52.7	117.04	16	0 45 11.61	19.444	0 52 33.5	123.05
17	23 10 3.48	21.300	10 26 9.3	117.43	17	0 47 8.21	19.422	0 40 15.5	122.96
18	23 12 11.11	21.244	10 14 23.6	117.79	18	0 49 4.67	19.399	0 27 58.0	122.86
19	23 14 18.41	21.189	10 2 35.8	118.13	19	0 51 1.00	19.378	0 15 41.2	122.73
20	23 16 25.38	21.134	9 50 46.0	118.48	20	0 52 57.21	19.358	S. 0 3 25.2	122.62
21	23 18 32.02	21.081	9 38 54.1	118.81	21	0 54 53.30	19.338	N. 0 8 50.2	122.49
22	23 20 38.35	21.028	9 27 0.3	119.12	22	0 56 49.27	19.318	0 21 4.7	122.35
23	23 22 44.36	20.976	9 15 4.7	119.42	23	0 58 45.12	19.300	0 33 18.4	122.21
24	23 24 50.06	20.925	S. 9 3 7.3	119.71	24	1 0 40.87	19.283	N. 0 45 31.2	122.06

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 21.					SUNDAY 23.				
0	1 040.87	19.283	N. 045 31.2	122.06	0	2 32 22.46	19.143	N. 10 056.3	106.83
1	1 236.52	19.266	057 43.1	121.90	1	2 34 17.35	19.153	10 11 35.9	106.36
2	1 432.06	19.249	1 9 54.0	121.73	2	2 36 12.30	19.164	10 22 12.6	105.88
3	1 627.51	19.233	1 22 3.9	121.57	3	2 38 7.32	19.176	10 32 46.4	105.39
4	1 822.86	19.218	1 34 12.8	121.38	4	2 40 2.41	19.188	10 43 17.3	104.90
5	1 1018.13	19.204	1 46 20.5	121.19	5	2 41 57.57	19.199	10 53 45.2	104.40
6	1 1213.31	19.190	1 58 27.1	121.01	6	2 43 52.80	19.211	11 4 10.1	103.89
7	1 14 8.41	19.177	2 10 32.6	120.81	7	2 45 48.10	19.224	11 14 31.9	103.38
8	1 16 3.43	19.164	2 22 36.8	120.59	8	2 47 43.49	19.238	11 24 50.6	102.86
9	1 17 58.38	19.152	2 34 39.7	120.38	9	2 49 38.96	19.252	11 35 6.2	102.34
10	1 19 53.25	19.140	2 46 41.4	120.17	10	2 51 34.51	19.265	11 45 18.7	101.81
11	1 21 48.06	19.130	2 58 41.7	119.93	11	2 53 30.14	19.280	11 55 27.9	101.27
12	1 23 42.51	19.120	3 10 40.6	119.70	12	2 55 25.87	19.295	12 5 33.9	100.73
13	1 25 37.80	19.111	3 22 38.1	119.45	13	2 57 21.68	19.310	12 15 36.6	100.18
14	1 27 32.14	19.102	3 34 34.0	119.20	14	2 59 17.59	19.326	12 25 36.0	99.63
15	1 29 26.72	19.093	3 46 28.5	118.95	15	3 1 13.59	19.342	12 35 32.1	99.06
16	1 31 21.26	19.087	3 58 21.4	118.68	16	3 3 9.69	19.358	12 45 24.7	98.48
17	1 33 15.76	19.079	4 10 12.7	118.42	17	3 5 5.88	19.374	12 55 13.9	97.92
18	1 35 10.21	19.073	4 22 2.4	118.14	18	3 7 2.18	19.392	13 4 59.7	97.34
19	1 37 4.63	19.068	4 33 50.4	117.86	19	3 8 58.58	19.409	13 14 42.0	96.75
20	1 38 59.02	19.063	4 45 36.7	117.57	20	3 10 55.09	19.428	13 24 20.7	96.16
21	1 40 53.38	19.058	4 57 21.2	117.27	21	3 12 51.71	19.445	13 33 55.9	95.56
22	1 42 47.71	19.053	5 9 3.9	116.97	22	3 14 48.43	19.463	13 43 27.4	94.95
23	1 44 42.02	19.050	N. 5 20 44.8	116.66	23	3 16 45.27	19.483	N. 13 52 55.3	94.34
SATURDAY 22.					MONDAY 24.				
0	1 46 36.31	19.048	N. 5 32 23.8	116.34	0	3 18 42.22	19.502	N. 14 2 19.5	93.73
1	1 48 30.59	19.045	5 44 0.9	116.02	1	3 20 39.29	19.521	14 11 40.0	93.10
2	1 50 24.85	19.043	5 55 36.0	115.68	2	3 22 36.47	19.540	14 20 56.7	92.47
3	1 52 19.11	19.043	6 7 9.1	115.35	3	3 24 33.77	19.560	14 30 9.6	91.83
4	1 54 13.36	19.043	6 18 40.2	115.02	4	3 26 31.19	19.580	14 39 18.6	91.18
5	1 56 7.62	19.043	6 30 9.3	114.67	5	3 28 28.73	19.601	14 48 23.8	90.54
6	1 58 1.87	19.043	6 41 36.2	114.30	6	3 30 26.40	19.622	14 57 25.1	89.89
7	1 59 56.13	19.044	6 53 0.9	113.94	7	3 32 24.19	19.643	15 6 22.5	89.23
8	2 1 50.40	19.046	7 4 23.5	113.58	8	3 34 22.11	19.664	15 15 15.8	88.55
9	2 3 44.68	19.048	7 15 43.9	113.21	9	3 36 20.16	19.685	15 24 5.1	87.88
10	2 5 38.98	19.051	7 27 2.0	112.83	10	3 38 18.33	19.707	15 32 50.4	87.21
11	2 7 33.29	19.054	7 38 17.8	112.43	11	3 40 16.64	19.728	15 41 31.6	86.52
12	2 9 27.63	19.058	7 49 31.2	112.04	12	3 42 15.07	19.750	15 50 8.6	85.83
13	2 11 21.99	19.063	8 0 42.3	111.64	13	3 44 13.64	19.773	15 58 41.5	85.13
14	2 13 16.38	19.068	8 11 50.9	111.23	14	3 46 12.35	19.796	16 7 10.2	84.43
15	2 15 10.80	19.073	8 22 57.1	110.83	15	3 48 11.19	19.818	16 15 34.6	83.72
16	2 17 5.25	19.078	8 34 0.8	110.41	16	3 50 10.17	19.841	16 23 54.8	83.00
17	2 18 59.74	19.086	8 45 2.0	109.98	17	3 52 9.28	19.864	16 32 10.6	82.28
18	2 20 54.28	19.093	8 56 0.6	109.55	18	3 54 8.54	19.888	16 40 22.1	81.55
19	2 22 48.85	19.099	9 6 56.6	109.12	19	3 56 7.93	19.910	16 48 29.2	80.82
20	2 24 43.47	19.108	9 17 50.0	108.68	20	3 58 7.46	19.933	16 56 31.9	80.08
21	2 26 38.14	19.116	9 28 40.7	108.23	21	4 0 7.13	19.958	17 4 30.1	79.33
22	2 28 32.86	19.124	9 39 28.7	107.77	22	4 2 6.95	19.982	17 12 23.8	78.58
23	2 30 27.63	19.133	9 50 13.9	107.30	23	4 4 6.91	20.004	17 20 13.0	77.82
24	2 32 22.46	19.143	N. 10 056.3	106.83	24	4 6 7.00	20.028	N. 17 27 57.6	77.05

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 25.					THURSDAY 27.				
0	4 6 7 ⁰⁰	20 ⁰²⁸	N.17 27 57 ⁶	77 ⁰⁵	0	5 44 59 ⁵¹	21 ¹¹⁹	N.21 59 2 ³	33 ⁹³
1	4 8 7 ²⁴	20 ⁰⁵³	17 35 37 ⁶	76 ²⁸	1	5 47 6 ²⁸	21 ¹³⁸	22 2 22 ⁸	32 ⁹²
2	4 10 7 ⁶³	20 ⁰⁷⁸	17 43 13 ⁰	75 ⁵⁰	2	5 49 13 ¹⁶	21 ¹⁵⁵	22 5 37 ³	31 ⁹⁰
3	4 12 8 ¹⁷	20 ¹⁰²	17 50 43 ⁶	74 ⁷²	3	5 51 20 ¹⁴	21 ¹⁷²	22 8 45 ⁶	30 ⁸⁸
4	4 14 8 ⁸⁵	20 ¹²⁵	17 58 9 ⁶	73 ⁹³	4	5 53 27 ²²	21 ¹⁸⁸	22 11 47 ⁸	29 ⁸⁶
5	4 16 9 ⁶⁷	20 ¹⁴⁸	18 5 30 ⁸	73 ¹⁴	5	5 55 34 ⁴⁰	21 ²⁰⁵	22 14 43 ⁹	28 ⁸³
6	4 18 10 ⁶⁴	20 ¹⁷⁴	18 12 47 ³	72 ³⁴	6	5 57 41 ⁶⁸	21 ²²¹	22 17 33 ⁸	27 ⁷⁹
7	4 20 11 ⁷⁶	20 ¹⁹⁹	18 19 58 ⁹	71 ⁵³	7	5 59 49 ⁰⁵	21 ²³⁶	22 20 17 ⁴	26 ⁷⁶
8	4 22 13 ⁰³	20 ²²³	18 27 5 ⁷	70 ⁷³	8	6 1 56 ⁵¹	21 ²⁵¹	22 22 54 ⁹	25 ⁷³
9	4 24 14 ⁴⁴	20 ²⁴⁸	18 34 7 ⁶	69 ⁹⁰	9	6 4 4 ⁰⁶	21 ²⁶⁶	22 25 26 ²	24 ⁶⁹
10	4 26 16 ⁰⁰	20 ²⁷²	18 41 4 ⁵	69 ⁰⁸	10	6 6 11 ⁷⁰	21 ²⁸⁰	22 27 51 ²	23 ⁶⁴
11	4 28 17 ⁷⁰	20 ²⁹⁶	18 47 56 ⁵	68 ²⁶	11	6 8 19 ⁴²	21 ²⁹⁴	22 30 9 ⁹	22 ⁶⁰
12	4 30 19 ⁵⁵	20 ³²¹	18 54 43 ⁶	67 ⁴³	12	6 10 27 ²³	21 ³⁰⁸	22 32 22 ⁴	21 ⁵⁶
13	4 32 21 ⁵⁵	20 ³⁴⁶	19 1 25 ⁶	66 ⁵⁸	13	6 12 35 ¹²	21 ³²¹	22 34 28 ⁶	20 ⁵⁰
14	4 34 23 ⁷⁰	20 ³⁷¹	19 8 2 ⁵	65 ⁷³	14	6 14 43 ⁰⁸	21 ³³³	22 36 28 ⁴	19 ⁴⁴
15	4 36 26 ⁰⁰	20 ³⁹⁵	19 14 34 ⁴	64 ⁸⁸	15	6 16 51 ¹²	21 ³⁴⁶	22 38 21 ⁹	18 ³⁹
16	4 38 28 ⁴⁴	20 ⁴¹⁹	19 21 1 ¹	64 ⁰²	16	6 18 59 ²³	21 ³⁵⁸	22 40 9 ¹	17 ³⁴
17	4 40 31 ⁰³	20 ⁴⁴³	19 27 22 ⁶	63 ¹⁶	17	6 21 7 ⁴¹	21 ³⁶⁸	22 41 50 ⁰	16 ²⁸
18	4 42 33 ⁷⁶	20 ⁴⁶⁸	19 33 39 ⁰	62 ²⁹	18	6 23 15 ⁶⁵	21 ³⁷⁹	22 43 24 ⁴	15 ²¹
19	4 44 36 ⁶⁴	20 ⁴⁹²	19 39 50 ¹	61 ⁴²	19	6 25 23 ⁹⁶	21 ³⁹¹	22 44 52 ⁵	14 ¹⁵
20	4 46 39 ⁶⁶	20 ⁵¹⁶	19 45 56 ⁰	60 ⁵⁴	20	6 27 32 ³⁴	21 ⁴⁰¹	22 46 14 ²	13 ⁰⁸
21	4 48 42 ⁸³	20 ⁵⁴⁰	19 51 56 ⁶	59 ⁶⁵	21	6 29 40 ⁷⁷	21 ⁴⁰⁹	22 47 29 ⁴	12 ⁰¹
22	4 50 46 ¹⁴	20 ⁵⁶⁴	19 57 51 ⁸	58 ⁷⁶	22	6 31 49 ²⁵	21 ⁴¹⁸	22 48 38 ³	10 ⁹⁴
23	4 52 49 ⁶⁰	20 ⁵⁸⁸	N.20 3 41 ⁷	57 ⁸⁸	23	6 33 57 ⁷⁹	21 ⁴²⁸	N.22 49 40 ⁷	9 ⁸⁷
WEDNESDAY 26.					FRIDAY 28.				
0	4 54 53 ²⁰	20 ⁶¹²	N.20 9 26 ³	56 ⁹⁸	0	6 36 6 ³⁸	21 ⁴³⁶	N.22 50 36 ⁷	8 ⁸⁰
1	4 56 56 ⁹⁴	20 ⁶³⁵	20 15 5 ⁴	56 ⁰⁷	1	6 38 15 ⁰²	21 ⁴⁴³	22 51 26 ³	7 ⁷³
2	4 59 0 ⁸²	20 ⁶⁵⁹	20 20 39 ¹	55 ¹⁶	2	6 40 23 ⁷⁰	21 ⁴⁵¹	22 52 9 ⁴	6 ⁶⁴
3	5 1 4 ⁸⁵	20 ⁶⁸³	20 26 7 ³	54 ²⁴	3	6 42 32 ⁴³	21 ⁴⁵⁸	22 52 46 ⁰	5 ⁵⁷
4	5 3 9 ⁰¹	20 ⁷⁰⁵	20 31 30 ⁰	53 ³²	4	6 44 41 ²⁰	21 ⁴⁶⁴	22 53 16 ²	4 ⁴⁹
5	5 5 13 ³¹	20 ⁷²⁸	20 36 47 ¹	52 ³⁹	5	6 46 50 ⁰⁰	21 ⁴⁶⁹	22 53 39 ⁹	3 ⁴¹
6	5 7 17 ⁷⁴	20 ⁷⁵⁰	20 41 58 ⁷	51 ⁴⁷	6	6 48 58 ⁸³	21 ⁴⁷⁵	22 53 57 ¹	2 ³³
7	5 9 22 ³¹	20 ⁷⁷³	20 47 4 ⁷	50 ⁵³	7	6 51 7 ⁷⁰	21 ⁴⁸⁰	22 54 7 ⁹	1 ²⁵
8	5 11 27 ⁰²	20 ⁷⁹⁶	20 52 5 ⁰	49 ⁵⁸	8	6 53 16 ⁵⁹	21 ⁴⁸⁴	22 54 12 ¹	0 ¹⁷
9	5 13 31 ⁸⁶	20 ⁸¹⁸	20 56 59 ⁷	48 ⁶⁴	9	6 55 25 ⁵¹	21 ⁴⁸⁸	22 54 9 ⁹	0 ⁹²
10	5 15 36 ⁸³	20 ⁸⁴⁰	21 1 48 ⁷	47 ⁶⁹	10	6 57 34 ⁴⁵	21 ⁴⁹²	22 54 1 ¹	2 ⁰¹
11	5 17 41 ⁹⁴	20 ⁸⁶²	21 6 32 ⁰	46 ⁷³	11	6 59 43 ⁴¹	21 ⁴⁹⁴	22 53 45 ⁸	3 ⁰⁸
12	5 19 47 ¹⁷	20 ⁸⁸³	21 11 9 ⁵	45 ⁷⁸	12	7 1 52 ³⁸	21 ⁴⁹⁷	22 53 24 ¹	4 ¹⁶
13	5 21 52 ⁵³	20 ⁹⁰⁴	21 15 41 ³	44 ⁸¹	13	7 4 1 ³⁷	21 ⁴⁹⁹	22 52 55 ⁹	5 ²⁵
14	5 23 58 ⁰²	20 ⁹²⁵	21 20 7 ²	43 ⁸³	14	7 6 10 ³⁷	21 ⁵⁰¹	22 52 21 ¹	6 ³⁴
15	5 26 3 ⁶³	20 ⁹⁴⁶	21 24 27 ³	42 ⁸⁷	15	7 8 19 ³⁸	21 ⁵⁰²	22 51 39 ⁸	7 ⁴³
16	5 28 9 ³⁷	20 ⁹⁶⁷	21 28 41 ⁶	41 ⁸⁹	16	7 10 28 ³⁹	21 ⁵⁰²	22 50 52 ⁰	8 ⁵⁰
17	5 30 15 ²³	20 ⁹⁸⁷	21 32 50 ⁰	40 ⁹¹	17	7 12 37 ⁴⁰	21 ⁵⁰³	22 49 57 ⁸	9 ⁵⁸
18	5 32 21 ²¹	21 ⁰⁰⁷	21 36 52 ⁵	39 ⁹³	18	7 14 46 ⁴²	21 ⁵⁰³	22 48 57 ⁰	10 ⁶⁸
19	5 34 27 ³¹	21 ⁰²⁷	21 40 49 ¹	38 ⁹³	19	7 16 55 ⁴³	21 ⁵⁰¹	22 47 49 ⁷	11 ⁷⁶
20	5 36 33 ⁵³	21 ⁰⁴⁶	21 44 39 ⁷	37 ⁹⁴	20	7 19 4 ⁴³	21 ⁴⁹⁹	22 46 35 ⁹	12 ⁸⁴
21	5 38 39 ⁸⁶	21 ⁰⁶⁴	21 48 24 ⁴	36 ⁹⁵	21	7 21 13 ⁴²	21 ⁴⁹⁸	22 45 15 ⁶	13 ⁹³
22	5 40 46 ³⁰	21 ⁰⁸³	21 52 3 ¹	35 ⁹⁴	22	7 23 22 ⁴⁰	21 ⁴⁹⁶	22 43 48 ⁸	15 ⁰¹
23	5 42 52 ⁸⁵	21 ¹⁰¹	21 55 35 ⁷	34 ⁹³	23	7 25 31 ³⁷	21 ⁴⁹³	22 42 15 ⁵	16 ⁰⁹
24	5 44 59 ⁵¹	21 ¹¹⁹	N.21 59 2 ³	33 ⁹³	24	7 27 40 ³²	21 ⁴⁹⁰	N.22 40 35 ⁷	17 ¹⁷

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 29.					SUNDAY 30.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	7 27 40.32	21.490	N. 22 40 35.7	17.17	0	8 19 3.01	21.287	N. 21 28 41.6	42.53
1	7 29 49.25	21.486	22 38 49.5	18.24	1	8 21 10.69	21.274	21 24 23.3	43.57
2	7 31 58.15	21.482	22 36 56.8	19.33	2	8 23 18.30	21.261	21 19 58.8	44.58
3	7 34 7.03	21.478	22 34 57.6	20.40	3	8 25 25.82	21.247	21 15 28.3	45.60
4	7 36 15.88	21.473	22 32 52.0	21.48	4	8 27 33.26	21.233	21 10 51.6	46.62
5	7 38 24.70	21.467	22 30 39.9	22.55	5	8 29 40.62	21.219	21 6 8.9	47.63
6	7 40 33.48	21.461	22 28 21.4	23.62	6	8 31 47.89	21.204	21 1 20.1	48.63
7	7 42 42.23	21.455	22 25 56.5	24.69	7	8 33 55.07	21.189	20 56 25.3	49.63
8	7 44 50.94	21.448	22 23 25.1	25.76	8	8 36 2.16	21.174	20 51 24.5	50.63
9	7 46 59.61	21.441	22 20 47.4	26.83	9	8 38 9.16	21.159	20 46 17.7	51.63
10	7 49 8.23	21.433	22 18 3.2	27.89	10	8 40 16.07	21.144	20 41 5.0	52.62
11	7 51 16.81	21.426	22 15 12.7	28.95	11	8 42 22.89	21.128	20 35 46.3	53.61
12	7 53 25.34	21.418	22 12 15.8	30.02	12	8 44 29.61	21.112	20 30 21.7	54.59
13	7 55 33.82	21.408	22 9 12.5	31.08	13	8 46 36.23	21.096	20 24 51.2	55.57
14	7 57 42.24	21.399	22 6 2.9	32.13	14	8 48 42.76	21.080	20 19 14.9	56.53
15	7 59 50.61	21.389	22 2 47.0	33.18	15	8 50 49.19	21.063	20 13 32.8	57.51
16	8 1 58.91	21.379	21 59 24.8	34.23	16	8 52 55.52	21.047	20 7 44.8	58.48
17	8 4 7.16	21.370	21 55 56.2	35.28	17	8 55 1.75	21.029	20 1 51.1	59.43
18	8 6 15.35	21.359	21 52 21.4	36.33	18	8 57 7.87	21.012	19 55 51.6	60.39
19	8 8 23.47	21.348	21 48 40.3	37.37	19	8 59 13.89	20.995	19 49 46.4	61.34
20	8 10 31.52	21.336	21 44 53.0	38.40	20	9 1 19.81	20.978	19 43 35.5	62.28
21	8 12 39.50	21.324	21 40 59.5	39.44	21	9 3 25.63	20.961	19 37 19.0	63.23
22	8 14 47.41	21.313	21 36 59.7	40.48	22	9 5 31.34	20.943	19 30 56.8	64.17
23	8 16 55.25	21.300	21 32 53.7	41.51	23	9 7 36.95	20.925	19 24 29.0	65.10
24	8 19 3.01	21.287	N. 21 28 41.6	42.53	24	9 9 42.44	20.907	N. 19 17 55.6	66.03

PHASES OF THE MOON.

June 6)	First Quarter	- - - - -	h m
13	○	Full Moon	- - - - -	1 58.2
19	☾	Last Quarter	- - - - -	19 35.1
27	●	New Moon	- - - - -	20 53.6

June 13	☾	Perigee	- - - - -	h
26	☾	Apogee	- - - - -	21

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	SUN W.	30 7 21	3454	31 28 36	3450	32 49 56	3446	34 11 20	3442
	Saturn E.	34 9 41	3103	32 41 35	3101	31 13 27	3100	29 45 17	3099
	Spica E.	101 2 19	3103	99 34 13	3101	98 6 4	3099	96 37 53	3096
2	SUN W.	40 59 32	3420	42 21 26	3415	43 43 26	3409	45 5 32	3403
	Spica E.	89 16 1	3079	87 47 26	3075	86 18 46	3070	84 50 0	3065
3	SUN W.	51 57 49	3370	53 20 40	3362	54 43 40	3354	56 6 49	3345
	Spica E.	77 24 40	3038	75 55 14	3033	74 25 42	3026	72 56 2	3018
	Antares E.	123 17 36	3055	121 48 31	3046	120 19 15	3038	118 49 49	3029
4	SUN W.	63 5 9	3298	64 29 23	3287	65 53 50	3276	67 18 30	3265
	Pollux W.	25 32 5	3054	27 1 11	3033	28 30 43	3014	30 0 39	2995
	Spica E.	65 25 23	2981	63 54 46	2972	62 23 58	2963	60 52 59	2954
	Antares E.	111 19 47	2981	109 49 10	2970	108 18 20	2960	106 47 17	2948
5	SUN W.	74 25 18	3202	75 51 25	3188	77 17 49	3173	78 44 30	3159
	Pollux W.	37 35 56	2909	39 8 3	2893	40 40 31	2876	42 13 20	2860
	Spica E.	53 15 9	2906	51 42 58	2895	50 10 33	2886	48 37 56	2875
	Antares E.	99 8 22	2888	97 35 48	2876	96 2 59	2862	94 29 52	2849
6	SUN W.	86 2 24	3082	87 30 56	3065	88 59 48	3047	90 29 2	3031
	Pollux W.	50 2 42	2778	51 37 39	2761	53 12 58	2744	54 48 40	2727
	Saturn W.	26 19 43	2779	27 54 38	2763	29 29 55	2746	31 5 34	2730
	Spica E.	40 51 31	2825	39 17 35	2815	37 43 27	2807	36 9 8	2799
	Antares E.	86 39 51	2778	85 4 54	2763	83 29 37	2748	81 54 1	2732
	Jupiter E.	113 36 9	2703	111 59 33	2687	110 22 36	2672	108 45 18	2657
7	SUN W.	98 0 36	2941	99 32 3	2922	101 3 54	2903	102 36 9	2883
	Pollux W.	62 52 55	2639	64 30 57	2620	66 9 25	2602	67 48 17	2584
	Saturn W.	39 9 23	2644	40 47 18	2626	42 25 38	2608	44 4 22	2590
	Regulus W.	26 58 16	2644	28 36 11	2624	30 14 34	2604	31 53 24	2583
	Antares E.	73 50 41	2652	72 12 56	2635	70 34 48	2618	68 56 18	2601
	Jupiter E.	100 33 23	2574	98 53 52	2556	97 13 57	2538	95 33 37	2521
	α Aquilæ E.	117 20 40	3474	115 59 47	3433	114 38 8	3393	113 15 44	3356
8	SUN W.	110 23 36	2786	111 58 22	2767	113 33 33	2747	115 9 11	2727
	Pollux W.	76 8 58	2491	77 50 24	2472	79 32 16	2454	81 14 34	2435
	Saturn W.	52 24 15	2498	54 5 31	2480	55 47 12	2461	57 29 20	2443
	Regulus W.	40 14 29	2485	41 56 4	2465	43 38 7	2445	45 20 37	2426
	Antares E.	60 38 2	2517	58 57 13	2501	57 16 1	2485	55 34 26	2468
	Jupiter E.	87 5 48	2431	85 22 57	2413	83 39 41	2394	81 55 58	2376
	α Aquilæ E.	106 13 21	3188	104 46 57	3158	103 19 58	3129	101 52 24	3103
9	SUN W.	123 13 54	2629	124 52 9	2610	126 30 51	2591	128 9 59	2572
	Pollux W.	89 52 41	2343	91 37 38	2326	93 23 0	2307	95 8 49	2290
	Saturn W.	66 6 34	2351	67 51 20	2333	69 36 32	2315	71 22 10	2296
	Regulus W.	53 59 55	2332	55 45 8	2313	57 30 48	2295	59 16 55	2277
	Antares E.	47 0 58	2393	45 17 13	2380	43 33 9	2367	41 48 47	2355
	Jupiter E.	73 10 49	2285	71 24 28	2267	69 37 40	2250	67 50 27	2232
	α Aquilæ E.	94 26 46	2985	92 56 14	2965	91 25 17	2945	89 53 55	2928
10	Pollux W.	104 4 9	2207	105 52 26	2192	107 41 6	2177	109 30 8	2163
	Saturn W.	80 16 46	2212	82 4 55	2196	83 53 28	2181	85 42 25	2166

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]	
1	SUN W.	35 32 49	3438	36 54 22	3434	38 16 0	3430	39 37 43	3424
	Saturn E.	28 17 6	3096	26 48 52	3094	25 20 35	3092	23 52 15	3091
	Spica E.	95 9 38	3093	93 41 20	3089	92 12 57	3087	90 44 31	3083
2	SUN W.	46 27 45	3398	47 50 4	3391	49 12 31	3384	50 35 6	3377
	Spica E.	83 21 8	3061	81 52 11	3056	80 23 7	3051	78 53 57	3045
3	SUN W.	57 30 8	3337	58 53 37	3328	60 17 16	3318	61 41 7	3308
	Spica E.	71 26 12	3012	69 56 14	3005	68 26 7	2997	66 55 50	2989
	Antares E.	117 20 12	3020	115 50 24	3010	114 20 24	3001	112 50 12	2990
4	SUN W.	68 43 22	3253	70 8 29	3241	71 33 50	3227	72 59 27	3215
	Pollux W.	31 30 58	2977	33 1 40	2959	34 32 44	2942	36 4 9	2925
	Spica E.	59 21 49	2946	57 50 28	2935	56 18 54	2925	54 47 7	2916
	Antares E.	105 15 59	2937	103 44 27	2926	102 12 41	2913	100 40 39	2901
5	SUN W.	80 11 28	3144	81 38 44	3129	83 6 18	3114	84 34 11	3097
	Pollux W.	43 46 30	2844	45 20 1	2828	46 53 53	2811	48 28 7	2795
	Spica E.	47 5 5	2865	45 32 1	2855	43 58 44	2845	42 25 14	2835
	Antares E.	92 56 28	2835	91 22 46	2822	89 48 47	2807	88 14 28	2793
6	SUN W.	91 58 36	3013	93 28 33	2996	94 58 51	2977	96 29 32	2959
	Pollux W.	56 24 44	2710	58 1 11	2692	59 38 2	2674	61 15 17	2657
	Saturn W.	32 41 34	2713	34 17 57	2696	35 54 42	2678	37 31 51	2661
	Spica E.	34 34 39	2792	33 0 0	2785	31 25 13	2781	29 50 20	2779
	Antares E.	80 18 3	2716	78 41 45	2700	77 5 5	2684	75 28 4	2668
	Jupiter E.	107 7 40	2640	105 29 39	2624	103 51 17	2607	102 12 32	2590
7	SUN W.	104 8 49	2865	105 41 53	2845	107 15 22	2826	108 49 16	2806
	Pollux W.	69 27 34	2566	71 7 16	2547	72 47 24	2528	74 27 58	2510
	Saturn W.	45 43 30	2572	47 23 3	2553	49 3 2	2535	50 43 26	2517
	Regulus W.	33 32 42	2563	35 12 28	2543	36 52 41	2523	38 33 22	2504
	Antares E.	67 17 25	2585	65 38 9	2568	63 58 30	2551	62 18 27	2535
	Jupiter E.	93 52 54	2503	92 11 45	2485	90 30 11	2467	88 48 12	2450
	α Aquilæ E.	111 52 37	3319	110 28 48	3284	109 4 18	3251	107 39 9	3218
8	SUN W.	116 45 15	2707	118 21 45	2688	119 58 41	2668	121 36 4	2648
	Pollux W.	82 57 19	2417	84 40 30	2398	86 24 7	2380	88 8 11	2362
	Saturn W.	59 11 54	2424	60 54 55	2406	62 38 21	2387	64 22 15	2369
	Regulus W.	47 3 34	2407	48 46 59	2389	50 30 50	2369	52 15 9	2350
	Antares E.	53 52 28	2453	52 10 8	2437	50 27 26	2422	48 44 23	2407
	Jupiter E.	80 11 49	2358	78 27 14	2340	76 42 12	2322	74 56 44	2303
	α Aquilæ E.	100 24 18	3076	98 55 39	3052	97 26 30	3028	95 56 52	3005
9	SUN W.	129 49 32	2553	131 29 31	2536	133 9 54	2517	134 50 43	2499
	Pollux W.	96 55 3	2272	98 41 43	2256	100 28 47	2239	102 16 16	2223
	Saturn W.	73 8 15	2279	74 54 45	2262	76 41 40	2245	78 29 0	2228
	Regulus W.	61 3 28	2260	62 50 27	2242	64 37 52	2225	66 25 42	2208
	Antares E.	40 4 7	2344	38 19 12	2335	36 34 4	2327	34 48 44	2321
	Jupiter E.	56 2 47	2215	64 14 42	2198	62 26 11	2181	60 37 15	2165
	α Aquilæ E.	88 22 12	2912	86 50 8	2897	85 17 45	2883	83 45 5	2872
10	Pollux W.	111 19 32	2148	113 9 18	2135	114 59 24	2122	116 49 49	2109
	Saturn W.	87 31 44	2151	89 21 25	2137	91 11 28	2123	93 1 52	2110

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	IIIh.	P.L. of diff.	VIh.	P.L. of diff.	IXh.	P.L. of diff.
		^o ' "		^o ' "		^o ' "		^o ' "	
10	Regulus W.	68 13 57	2191	70 2 38	2176	71 51 42	2161	73 41 9	2145
	Antares E.	33 3 15	2318	31 17 42	2316	29 32 6	2318	27 46 33	2324
	Jupiter E.	58 47 54	2149	56 58 9	2133	55 8 0	2117	53 17 27	2103
	α Aquilæ E.	82 12 10	2861	80 39 1	2853	79 5 42	2845	77 32 13	2841
	Fomalhaut E.	115 47 3	2444	114 4 2	2401	112 20 28	2380	110 36 24	2359
11	Saturn W.	94 52 36	2098	96 43 39	2086	98 35 0	2075	100 26 38	2063
	Regulus W.	82 53 59	2076	84 45 35	2064	86 37 29	2053	88 29 40	2043
	Spica W.	29 31 43	2207	31 20 0	2181	33 8 56	2159	34 58 26	2137
	Jupiter E.	43 59 14	2035	42 6 34	2023	40 13 36	2012	38 20 20	2001
	α Aquilæ E.	69 44 5	2847	68 10 38	2855	66 37 22	2868	65 4 22	2883
	Fomalhaut E.	101 49 8	2272	100 2 28	2258	98 15 27	2245	96 28 6	2233
	α Pegasi E.	117 12 25	2585	115 33 9	2557	113 53 15	2532	112 12 46	2508
12	Saturn W.	109 48 39	2020	111 41 42	2014	113 34 54	2008	115 28 15	2003
	Regulus W.	97 54 25	2000	99 48 0	1993	101 41 46	1987	103 35 40	1982
	Spica W.	44 12 54	2061	46 4 53	2050	47 57 9	2041	49 49 40	2033
	Jupiter E.	28 50 12	1958	26 55 32	1952	25 0 42	1946	23 5 42	1941
	α Aquilæ E.	57 25 38	3015	55 55 44	3056	54 26 41	3102	52 58 34	3157
	Fomalhaut E.	87 27 21	2188	85 38 35	2182	83 49 41	2178	82 0 40	2174
	α Pegasi E.	103 43 0	2419	101 59 53	2406	100 16 27	2396	98 32 47	2387
13	Spica W.	59 14 53	2007	61 8 16	2006	63 1 41	2005	64 55 8	2004
	α Aquilæ E.	45 57 2	3554	44 37 37	3668	43 20 16	3796	42 5 10	3943
	Fomalhaut E.	72 55 1	2178	71 6 1	2182	69 17 7	2189	67 28 23	2196
	α Pegasi E.	89 51 53	2366	88 7 29	2366	86 23 5	2368	84 38 45	2372
14	Spica W.	74 21 56	2019	76 15 1	2024	78 7 58	2030	80 0 45	2037
	Antares W.	28 49 59	2136	30 40 3	2126	32 30 23	2119	34 20 53	2115
	Fomalhaut E.	58 28 23	2260	56 41 24	2279	54 54 53	2300	53 8 53	2322
	α Pegasi E.	75 59 17	2417	74 16 7	2431	72 33 17	2448	70 50 50	2466
	α Arietis E.	118 53 14	2170	117 4 2	2170	115 14 49	2171	113 25 38	2174
	Venus E.	124 32 4	2174	122 42 58	2182	120 54 3	2189	119 5 19	2198
15	Spica W.	89 21 33	2084	91 12 57	2096	93 4 3	2108	94 54 50	2120
	Antares W.	43 33 49	2126	45 24 9	2132	47 14 19	2140	49 4 17	2149
	Fomalhaut E.	44 28 29	2482	42 46 50	2524	41 6 10	2572	39 26 37	2626
	α Pegasi E.	62 25 53	2588	60 46 41	2619	59 8 12	2654	57 30 30	2691
	α Arietis E.	104 21 16	2204	102 32 54	2213	100 44 46	2223	98 56 53	2235
	Venus E.	110 5 9	2250	108 17 56	2263	106 31 2	2276	104 44 27	2289
16	Spica W.	104 3 37	2193	105 52 15	2210	107 40 28	2226	109 28 17	2243
	Antares W.	58 10 17	2207	59 58 34	2220	61 46 31	2234	63 34 8	2249
	Jupiter W.	32 5 35	2120	33 56 4	2135	35 46 10	2151	37 35 52	2167
	α Pegasi E.	49 35 48	2931	48 4 8	2992	46 33 45	3059	45 4 45	3132
	α Arietis E.	90 2 1	2302	88 16 4	2318	86 30 31	2334	84 45 21	2351
	Venus E.	95 56 51	2366	94 12 28	2384	92 28 30	2401	90 44 56	2419
	SUN E.	138 57 27	2453	137 15 7	2468	135 33 9	2485	133 51 35	2503
17	Antares W.	72 26 30	2329	74 11 47	2346	75 56 39	2363	77 41 7	2380
	Jupiter W.	46 38 12	2251	48 25 24	2268	50 12 11	2286	51 58 31	2304
	α Pegasi E.	38 4 36	3628	36 46 32	3764	35 30 52	3916	34 17 48	4087

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^a .	P.L. of diff.	XVIII ^a .	P.L. of diff.	XXI ^a .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
10	Regulus W.	75 31 0	2130	77 21 13	2116	79 11 48	2102	81 2 44	2090
	Antares E.	26 1 9	2337	24 16 4	2356	22 31 25	2384	20 47 27	2424
	Jupiter E.	51 26 32	2088	49 35 14	2074	47 43 34	2061	45 51 34	2048
	α Aquilæ E.	75 58 38	2838	74 24 59	2836	72 51 18	2838	71 17 39	2842
	Fomalhaut E.	108 51 51	2339	107 6 49	2321	105 21 20	2304	103 35 26	2287
11	Saturn W.	102 18 34	2054	104 10 44	2044	106 3 9	2035	107 55 48	2028
	Regulus W.	90 22 7	2032	92 14 51	2023	94 7 49	2015	96 1 0	2006
	Spica W.	36 48 28	2118	38 38 59	2102	40 29 55	2087	42 21 14	2073
	Jupiter E.	36 26 48	1991	34 33 0	1982	32 38 57	1973	30 44 41	1965
	α Aquilæ E.	63 31 41	2901	61 59 23	2923	60 27 33	2949	58 56 16	2980
	Fomalhaut E.	94 40 27	2222	92 52 32	2211	91 4 21	2202	89 15 57	2194
	α Pegasi E.	110 31 44	2487	108 50 12	2467	107 8 12	2450	105 25 48	2433
12	Saturn W.	117 21 44	1999	119 15 20	1996	121 9 1	1994	123 2 45	1992
	Regulus W.	105 29 42	1978	107 23 51	1975	109 18 4	1972	111 12 22	1970
	Spica W.	51 42 23	2025	53 35 18	2019	55 28 22	2014	57 21 34	2010
	Jupiter E.	21 10 35	1938	19 15 22	1934	17 20 3	1932	15 24 41	1931
	α Aquilæ E.	51 31 33	3217	50 5 44	3286	48 41 16	3365	47 18 19	3453
	Fomalhaut E.	80 11 34	2173	78 22 26	2172	76 33 16	2172	74 44 7	2174
	α Pegasi E.	96 48 53	2379	95 4 48	2373	93 20 35	2369	91 36 16	2366
13	Spica W.	66 48 36	2005	68 42 2	2008	70 35 24	2010	72 28 43	2014
	α Aquilæ E.	40 52 34	4110	39 42 42	4301	38 35 50	4519	37 32 14	4769
	Fomalhaut E.	65 39 50	2206	63 51 31	2216	62 3 28	2230	60 15 45	2244
	α Pegasi E.	82 54 30	2378	81 10 24	2385	79 26 28	2394	77 42 45	2405
14	Spica W.	81 53 22	2045	83 45 46	2054	85 37 56	2063	87 29 52	2073
	Antares W.	36 11 29	2113	38 2 8	2114	39 52 46	2116	41 43 21	2120
	Fomalhaut E.	51 23 26	2348	49 38 36	2376	47 54 27	2408	46 11 3	2443
	α Pegasi E.	69 8 48	2486	67 27 15	2508	65 46 13	2532	64 5 44	2559
	α Arietis E.	111 36 31	2177	109 47 29	2182	107 58 35	2188	106 9 50	2196
	Venus E.	117 16 48	2206	115 28 30	2216	113 40 27	2227	111 52 40	2238
15	Spica W.	96 45 18	2134	98 35 26	2148	100 25 12	2163	102 14 36	2178
	Antares W.	50 54 1	2159	52 43 30	2170	54 32 43	2181	56 21 39	2193
	Fomalhaut E.	37 48 17	2687	36 11 19	2754	34 35 51	2831	33 2 3	2920
	α Pegasi E.	55 53 38	2732	54 17 40	2775	52 42 39	2822	51 8 40	2874
	α Arietis E.	97 9 17	2246	95 21 58	2260	93 34 59	2273	91 48 19	2287
	Venus E.	102 58 12	2304	101 12 19	2319	99 26 47	2334	97 41 37	2350
16	Spica W.	111 15 41	2260	113 2 39	2279	114 49 10	2297	116 35 14	2315
	Antares W.	65 21 22	2264	67 8 14	2280	68 54 43	2296	70 40 48	2312
	Jupiter W.	39 25 9	2182	41 14 3	2200	43 2 31	2217	44 50 34	2233
	α Pegasi E.	43 37 14	3213	42 11 20	3301	40 47 10	3399	39 24 52	3507
	α Arietis E.	83 0 36	2369	81 16 17	2387	79 32 24	2405	77 48 57	2425
	Venus E.	89 1 48	2436	87 19 5	2454	85 36 47	2473	83 54 56	2492
	Sun E.	132 10 26	2520	130 29 40	2538	128 49 19	2556	127 9 23	2574
17	Antares W.	79 25 10	2398	81 8 47	2416	82 51 59	2433	84 34 46	2452
	Jupiter W.	53 44 25	2321	55 29 54	2339	57 14 56	2357	58 59 32	2375
	α Pegasi E.	33 7 33	4281	32 0 23	4502	30 56 33	4756	29 56 20	5050

MEAN TIME.

LUNAR DISTANCES.

Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
α Arietis	E.	76 5 58	2445	74 23 28	2465	72 41 26	2487	70 59 54	2507
Venus	E.	82 13 31	2511	80 32 33	2530	78 52 1	2549	77 11 56	2569
SUN	E.	125 29 52	2593	123 50 47	2611	122 12 7	2630	120 33 53	2649
Antares	W.	86 17 7	2470	87 59 3	2488	89 40 33	2506	91 21 38	2524
Jupiter	W.	60 43 43	2393	62 27 27	2411	64 10 46	2429	65 53 40	2447
α Aquilæ	W.	47 9 29	3847	48 23 43	3791	49 38 55	3742	50 54 58	3699
α Arietis	E.	62 39 52	2622	61 1 27	2647	59 23 36	2672	57 46 19	2698
Venus	E.	68 58 17	2668	67 20 54	2687	65 43 57	2707	64 7 26	2727
SUN	E.	112 29 13	2746	110 53 34	2766	109 18 21	2785	107 43 33	2805
Antares	W.	99 40 48	2613	101 19 25	2632	102 57 37	2649	104 35 26	2666
Jupiter	W.	74 21 52	2535	76 2 17	2551	77 42 19	2568	79 21 58	2585
α Aquilæ	W.	57 24 44	3559	58 44 3	3542	60 3 41	3527	61 23 35	3516
α Arietis	E.	49 48 45	2838	48 15 7	2869	46 42 9	2902	45 9 53	2935
Venus	E.	56 11 22	2824	54 37 25	2843	53 3 53	2861	51 30 44	2880
SUN	E.	99 55 50	2899	98 23 30	2918	96 51 34	2935	95 20 0	2954
Jupiter	W.	87 34 37	2664	89 12 5	2679	90 49 13	2695	92 26 0	2708
α Aquilæ	W.	68 5 30	3488	69 26 8	3486	70 46 48	3487	72 7 27	3488
Fomalhaut	W.	32 28 27	3441	33 49 57	3397	35 12 17	3360	36 35 19	3330
α Arietis	E.	37 40 0	3138	36 12 37	3188	34 46 13	3242	33 20 54	3301
Venus	E.	43 50 49	2968	42 19 56	2985	40 49 25	3002	39 19 15	3018
SUN	E.	87 47 48	3040	86 18 25	3057	84 49 23	3073	83 20 41	3089
Jupiter	W.	100 25 18	2776	102 0 17	2789	103 34 59	2801	105 9 26	2813
α Aquilæ	W.	78 50 2	3507	80 10 18	3514	81 30 27	3521	82 50 28	3527
Fomalhaut	W.	43 37 33	3239	45 2 56	3230	46 28 30	3222	47 54 13	3216
α Pegasi	W.	33 2 39	4585	34 5 17	4457	35 9 47	4346	36 15 57	4249
Venus	E.	31 53 17	3095	30 25 1	3109	28 57 2	3124	27 29 21	3137
SUN	E.	76 1 49	3163	74 34 55	3177	73 8 18	3189	71 41 56	3203
α Aquilæ	W.	89 28 22	3573	90 47 26	3583	92 6 19	3594	93 25 0	3605
Fomalhaut	W.	55 4 7	3203	56 30 13	3203	57 56 19	3203	59 22 25	3204
α Pegasi	W.	42 6 20	3914	43 19 26	3867	44 33 19	3827	45 47 53	3791
SUN	E.	64 33 52	3262	63 8 56	3272	61 44 12	3283	60 19 41	3293
α Aquilæ	W.	99 55 12	3669	101 12 32	3684	102 29 36	3698	103 46 25	3714
Fomalhaut	W.	66 32 33	3212	67 58 28	3214	69 24 20	3216	70 50 10	3219
α Pegasi	W.	52 9 0	3659	53 26 31	3639	54 44 23	3623	56 2 32	3608
SUN	E.	53 19 49	3338	51 56 21	3345	50 33 1	3352	49 9 50	3359
α Aquilæ	W.	110 6 4	3804	111 21 2	3824	112 35 39	3847	113 49 53	3869
Fomalhaut	W.	77 58 32	3232	79 24 3	3235	80 49 31	3237	82 14 56	3240
α Pegasi	W.	62 37 1	3550	63 56 30	3541	65 16 9	3534	66 35 56	3527
SUN	E.	42 15 49	3389	40 53 20	3395	39 30 58	3400	38 8 41	3404
Fomalhaut	W.	89 21 12	3253	90 46 18	3256	92 11 21	3259	93 36 21	3262
α Pegasi	W.	73 16 31	3501	74 36 54	3497	75 57 21	3494	77 17 52	3490
SUN	E.	31 18 24	3422	29 56 32	3424	28 34 43	3427	27 12 57	3430
SUN	W.	23 18 47	3364	24 41 45	3358	26 4 49	3352	27 28 0	3347
Spica	E.	80 18 37	3041	78 49 15	3037	77 19 48	3033	75 50 16	3027

MEAN TIME.									
LUNAR DISTANCES.									
Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
17	α Arietis E.	69 18 51	2530	67 38 19	2552	65 58 18	2575	64 18 49	2599
	Venus E.	75 32 19	2588	73 53 8	2608	72 14 24	2628	70 36 7	2648
	Sun E.	118 56 5	2669	117 18 43	2688	115 41 47	2707	114 5 17	2727
18	Antares W.	93 2 18	2542	94 42 33	2560	96 22 23	2578	98 1 48	2596
	Jupiter W.	67 36 8	2465	69 18 11	2482	70 59 49	2500	72 41 3	2517
	α Aquilæ W.	52 11 46	3662	53 29 14	3630	54 47 16	3603	56 5 47	3579
	α Arietis E.	56 9 36	2724	54 33 28	2751	52 57 56	2780	51 23 2	2808
	Venus E.	62 31 22	2747	60 55 44	2766	59 20 31	2785	57 45 44	2805
	Sun E.	106 9 11	2825	104 35 14	2843	103 1 42	2862	101 28 34	2880
19	Antares W.	106 12 51	2683	107 49 53	2701	109 26 32	2717	111 2 49	2734
	Jupiter W.	81 1 14	2601	82 40 7	2617	84 18 39	2634	85 56 48	2649
	α Aquilæ W.	62 43 41	3506	64 3 58	3499	65 24 23	3494	66 44 54	3489
	α Arietis E.	43 38 19	2972	42 7 31	3009	40 37 30	3050	39 8 19	3092
	Venus E.	49 57 59	2898	48 25 38	2916	46 53 39	2934	45 22 3	2951
	Sun E.	93 48 50	2972	92 18 2	2989	90 47 36	3007	89 17 32	3023
20	Jupiter W.	94 2 29	2723	95 38 38	2737	97 14 29	2750	98 50 3	2764
	α Aquilæ W.	73 28 5	3490	74 48 40	3493	76 9 12	3497	77 29 40	3502
	Fomalhaut W.	37 58 56	3305	39 23 2	3283	40 47 33	3265	42 12 25	3252
	α Arietis E.	31 56 44	3367	30 33 50	3440	29 12 19	3524	27 52 21	3616
	Venus E.	37 49 24	3034	36 19 54	3050	34 50 43	3065	33 21 51	3080
	Sun E.	81 52 18	3104	80 24 13	3119	78 56 27	3134	77 28 59	3149
21	Jupiter W.	106 43 37	2824	108 17 33	2835	109 51 15	2847	111 24 42	2857
	α Aquilæ W.	84 10 22	3536	85 30 6	3545	86 49 41	3553	88 9 7	3563
	Fomalhaut W.	49 20 3	3211	50 45 59	3208	52 11 59	3205	53 38 2	3204
	α Pegasi W.	37 23 37	4164	38 32 37	4089	39 42 50	4024	40 54 6	3965
	Venus E.	26 1 56	3150	24 34 47	3163	23 7 54	3176	21 41 16	3189
	Sun E.	70 15 50	3216	68 50 0	3227	67 24 23	3240	65 59 1	3251
22	α Aquilæ W.	94 43 29	3617	96 1 45	3629	97 19 48	3642	98 37 37	3655
	Fomalhaut W.	60 48 30	3204	62 14 34	3206	63 40 36	3208	65 6 36	3210
	α Pegasi W.	47 3 5	3758	48 18 51	3728	49 35 8	3703	50 51 52	3680
	Sun E.	58 55 21	3303	57 31 13	3312	56 7 15	3320	54 43 27	3329
23	α Aquilæ W.	105 2 57	3731	106 19 11	3747	107 35 8	3766	108 50 46	3785
	Fomalhaut W.	72 15 56	3221	73 41 40	3224	75 7 21	3227	76 32 58	3230
	α Pegasi W.	57 20 58	3593	58 39 40	3581	59 58 35	3570	61 17 42	3559
	Sun E.	47 46 47	3366	46 23 52	3372	45 1 4	3379	43 38 23	3385
24	α Aquilæ W.	115 3 44	3894	116 17 10	3919	117 30 10	3947	118 42 42	3975
	Fomalhaut W.	83 40 17	3242	85 5 36	3246	86 30 51	3248	87 56 3	3251
	α Pegasi W.	67 55 50	3521	69 15 51	3514	70 35 59	3510	71 56 12	3505
	Sun E.	36 46 29	3408	35 24 21	3412	34 2 18	3415	32 40 19	3419
25	Fomalhaut W.	95 1 17	3264	96 26 11	3267	97 51 1	3270	99 15 48	3273
	α Pegasi W.	78 38 27	3488	79 59 4	3486	81 19 44	3484	82 40 26	3482
	Sun E.	25 51 14	3431	24 29 33	3433	23 7 54	3435	21 46 17	3436
30	Sun W.	28 51 17	3341	30 14 41	3334	31 38 13	3327	33 1 53	3321
	Spica E.	74 20 37	3022	72 50 52	3018	71 21 1	3012	69 51 3	3006

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Mon.	1	6 42 31.94	10.340	N 23 5 34.1	10.50	1 8.76	3 36.29	0.482
Tues.	2	6 46 39.96	10.328	23 1 10.0	11.51	1 8.72	3 47.72	0.470
Wed.	3	6 50 47.68	10.315	22 56 21.8	12.51	1 8.68	3 58.85	0.457
Thur.	4	6 54 55.08	10.301	22 51 9.5	13.51	1 8.64	4 9.66	0.443
Frid.	5	6 59 2.13	10.286	22 45 33.4	14.50	1 8.59	4 20.13	0.429
Sat.	6	7 3 8.82	10.271	22 39 33.6	15.48	1 8.54	4 30.23	0.413
Sun.	7	7 7 15.13	10.254	22 33 10.2	16.46	1 8.49	4 39.95	0.397
Mon.	8	7 11 21.03	10.237	22 26 23.3	17.44	1 8.44	4 49.27	0.380
Tues.	9	7 15 26.52	10.220	22 19 13.2	18.40	1 8.38	4 58.18	0.362
Wed.	10	7 19 31.57	10.201	22 11 40.0	19.36	1 8.32	5 6.66	0.344
Thur.	11	7 23 36.18	10.183	22 3 43.9	20.31	1 8.26	5 14.69	0.325
Frid.	12	7 27 40.34	10.164	21 55 25.2	21.25	1 8.19	5 22.26	0.306
Sat.	13	7 31 44.03	10.144	21 46 43.9	22.18	1 8.12	5 29.38	0.286
Sun.	14	7 35 47.23	10.123	21 37 40.4	23.11	1 8.05	5 36.01	0.266
Mon.	15	7 39 49.95	10.103	21 28 14.7	24.03	1 7.98	5 42.15	0.246
Tues.	16	7 43 52.18	10.082	21 18 27.1	24.93	1 7.91	5 47.81	0.225
Wed.	17	7 47 53.90	10.061	21 8 17.9	25.83	1 7.84	5 52.96	0.204
Thur.	18	7 51 55.11	10.040	20 57 47.1	26.73	1 7.77	5 57.60	0.183
Frid.	19	7 55 55.81	10.018	20 46 55.0	27.61	1 7.69	6 1.73	0.161
Sat.	20	7 59 55.97	9.996	20 35 41.8	28.48	1 7.61	6 5.33	0.139
Sun.	21	8 3 55.60	9.973	20 24 7.8	29.34	1 7.53	6 8.39	0.116
Mon.	22	8 7 54.68	9.950	20 12 13.3	30.19	1 7.45	6 10.90	0.093
Tues.	23	8 11 53.20	9.926	19 59 58.4	31.04	1 7.36	6 12.86	0.070
Wed.	24	8 15 51.15	9.903	19 47 23.5	31.87	1 7.28	6 14.26	0.046
Thur.	25	8 19 48.53	9.879	19 34 28.7	32.69	1 7.20	6 15.08	0.022
Frid.	26	8 23 45.33	9.854	19 21 14.5	33.49	1 7.11	6 15.32	0.002
Sat.	27	8 27 41.53	9.829	19 7 41.0	34.29	1 7.03	6 14.96	0.027
Sun.	28	8 31 37.13	9.804	18 53 48.5	35.08	1 6.94	6 14.01	0.052
Mon.	29	8 35 32.12	9.779	18 39 37.3	35.85	1 6.85	6 12.45	0.078
Tues.	30	8 39 26.50	9.753	18 25 7.8	36.61	1 6.76	6 10.28	0.103
Wed.	31	8 43 20.26	9.727	18 10 20.1	37.36	1 6.68	6 7.49	0.129
Thur.	32	8 47 13.40	9.701	N.17 55 14.5	38.10	1 6.60	6 4.08	0.155

*Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subtracted from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		^h ^m ^s	[°] ['] ["]	['] ["]	^m ^s	^h ^m ^s
Mon.	1	6 42 31.32	N.23 5 34.7	15 45.9	3 36.26	6 38 55.06
Tues.	2	6 46 39.31	23 1 10.7	15 45.9	3 47.69	6 42 51.62
Wed.	3	6 50 47.00	22 56 22.6	15 45.9	3 58.82	6 46 48.18
Thur.	4	6 54 54.37	22 51 10.5	15 46.0	4 9.63	6 50 44.73
Frid.	5	6 59 1.39	22 45 34.5	15 46.0	4 20.10	6 54 41.29
Sat.	6	7 3 8.05	22 39 34.7	15 46.0	4 30.20	6 58 37.85
Sun.	7	7 7 14.33	22 33 11.4	15 46.0	4 39.92	7 2 34.41
Mon.	8	7 11 20.21	22 26 24.7	15 46.0	4 49.24	7 6 30.96
Tues.	9	7 15 25.67	22 19 14.7	15 46.1	4 58.15	7 10 27.52
Wed.	10	7 19 30.70	22 11 41.6	15 46.1	5 6.63	7 14 24.08
Thur.	11	7 23 35.29	22 3 45.7	15 46.2	5 14.66	7 18 20.64
Frid.	12	7 27 39.43	21 55 27.1	15 46.2	5 22.24	7 22 17.19
Sat.	13	7 31 43.11	21 46 46.0	15 46.3	5 29.35	7 26 13.75
Sun.	14	7 35 46.29	21 37 42.5	15 46.3	5 35.98	7 30 10.31
Mon.	15	7 39 48.99	21 28 17.0	15 46.4	5 42.13	7 34 6.86
Tues.	16	7 43 51.20	21 18 29.6	15 46.4	5 47.78	7 38 3.42
Wed.	17	7 47 52.91	21 8 20.4	15 46.5	5 52.94	7 41 59.98
Thur.	18	7 51 54.12	20 57 49.7	15 46.5	5 57.58	7 45 56.53
Frid.	19	7 55 54.80	20 46 57.7	15 46.6	6 1.71	7 49 53.09
Sat.	20	7 59 54.96	20 35 44.7	15 46.7	6 5.31	7 53 49.65
Sun.	21	8 3 54.58	20 24 10.8	15 46.7	6 8.37	7 57 46.21
Mon.	22	8 7 53.65	20 12 16.4	15 46.8	6 10.89	8 1 42.76
Tues.	23	8 11 52.17	20 0 1.6	15 46.9	6 12.85	8 5 39.32
Wed.	24	8 15 50.13	19 47 26.8	15 47.0	6 14.25	8 9 35.87
Thur.	25	8 19 47.51	19 34 32.2	15 47.1	6 15.08	8 13 32.43
Frid.	26	8 23 44.31	19 21 18.0	15 47.2	6 15.32	8 17 28.99
Sat.	27	8 27 40.51	19 7 44.6	15 47.3	6 14.97	8 21 25.54
Sun.	28	8 31 36.11	18 53 52.2	15 47.4	6 14.02	8 25 22.10
Mon.	29	8 35 31.11	18 39 41.0	15 47.5	6 12.46	8 29 18.65
Tues.	30	8 39 25.50	18 25 11.5	15 47.6	6 10.29	8 33 15.21
Wed.	31	8 43 19.27	18 10 23.9	15 47.7	6 7.50	8 37 11.77
Thur.	32	8 47 12.42	N.17 55 18.4	15 47.9	6 4.10	8 41 8.32

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Apparent				Semidiameter.		Horizontal Parallax.	
	Longitude.	Latitude.						
	Noon.	Noon.			Noon.	Noon.	Midnight.	Noon.
1	99 46 11.8	N. 0° 07'	0.0072300	17 18 14.38	14 56.0	14 59.3	54 42.7	54 54.7
2	100 43 24.6	0° 17'	0.0072297	17 14 18.47	15 3.0	15 7.1	55 8.2	55 23.2
3	101 40 37.2	0° 25'	0.0072269	17 10 22.56	15 11.6	15 16.5	55 39.8	55 57.9
4	102 37 49.6	0° 30'	0.0072217	17 6 26.65	15 21.9	15 27.7	56 17.6	56 38.8
5	103 35 1.8	0° 33'	0.0072143	17 2 30.74	15 33.9	15 40.3	57 1.4	57 25.1
6	104 32 13.8	0° 33'	0.0072047	16 58 34.83	15 47.1	15 54.0	57 49.8	58 15.1
7	105 29 25.6	0° 31'	0.0071931	16 54 38.91	16 1.0	16 7.9	58 40.7	59 6.1
8	106 26 37.3	0° 25'	0.0071797	16 50 43.00	16 14.6	16 21.0	59 30.7	59 54.0
9	107 23 48.9	0° 16'	0.0071644	16 46 47.09	16 26.8	16 31.9	60 15.4	60 34.2
10	108 21 0.6	N. 0° 03'	0.0071476	16 42 51.18	16 36.2	16 39.4	60 49.8	61 1.6
11	109 18 12.3	S. 0° 11'	0.0071295	16 38 55.27	16 41.5	16 42.3	61 9.2	61 12.2
12	110 15 24.3	0° 26'	0.0071100	16 34 59.36	16 41.8	16 40.0	61 10.4	61 3.9
13	111 12 36.5	0° 40'	0.0070891	16 31 3.45	16 37.0	16 32.8	60 52.8	60 37.4
14	112 9 49.0	0° 53'	0.0070668	16 27 7.53	16 27.5	16 21.4	60 18.1	59 55.7
15	113 7 2.0	0° 64'	0.0070432	16 23 11.62	16 14.6	16 7.3	59 30.7	59 3.8
16	114 4 15.5	0° 72'	0.0070182	16 19 15.71	15 59.6	15 51.8	58 35.8	58 7.2
17	115 1 29.7	0° 77'	0.0069915	16 15 19.80	15 44.0	15 36.4	57 38.7	57 10.8
18	115 58 44.7	0° 79'	0.0069632	16 11 23.89	15 29.1	15 22.2	56 44.0	56 18.7
19	116 56 0.4	0° 78'	0.0069330	16 7 27.98	15 15.8	15 9.9	55 55.1	55 33.6
20	117 53 17.0	0° 74'	0.0069009	16 3 34.07	15 4.6	15 0.0	55 14.3	54 57.2
21	118 50 34.4	0° 68'	0.0068667	15 59 36.16	14 55.9	14 52.5	54 42.4	54 30.0
22	119 47 52.8	0° 60'	0.0068304	15 55 40.25	14 49.8	14 47.7	54 20.0	54 12.2
23	120 45 12.0	0° 50'	0.0067919	15 51 44.34	14 46.2	14 45.2	54 6.6	54 3.1
24	121 42 32.1	0° 40'	0.0067510	15 47 48.43	14 44.8	14 44.8	54 1.5	54 1.8
25	122 39 53.1	0° 29'	0.0067078	15 43 52.52	14 45.4	14 46.3	54 3.8	54 7.3
26	123 37 14.9	0° 17'	0.0066623	15 39 56.61	14 47.7	14 49.5	54 12.4	54 18.7
27	124 34 37.5	S. 0° 06'	0.0066143	15 36 0.70	14 51.5	14 53.9	54 26.3	54 35.0
28	125 32 0.9	N. 0° 05'	0.0065639	15 32 4.79	14 56.6	14 59.4	54 44.7	54 55.4
29	126 29 25.0	0° 15'	0.0065111	15 28 8.88	15 2.7	15 6.1	55 7.1	55 19.6
30	127 26 49.8	0° 23'	0.0064559	15 24 12.97	15 9.7	15 13.6	55 32.9	55 47.1
31	128 24 15.4	0° 29'	0.0063983	15 20 17.06	15 17.7	15 22.0	56 2.2	56 18.0
32	129 21 41.7	N. 0° 32'	0.0063385	15 16 21.15	15 26.6	15 31.4	56 34.7	56 52.2

MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S									
	Longitude.		Latitude.		Age.	Meridian Passage.				
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.			
1	134° 6' 3".8	140° 10' 34".9	N. 2° 48' 45".6	N. 3° 16' 19".9	3.1	2 35.8	14 59.5			
2	146 17 53.4	152 28 21.1	3 41 51.9	4 5 2.4	4.1	3 22.9	15 46.0			
3	158 42 20.2	165 0 13.3	4 25 32.6	4 43 3.9	5.1	4 8.9	16 31.7			
4	171 22 23.5	177 49 13.0	4 57 18.6	5 8 0.3	6.1	4 54.4	17 17.2			
5	184 21 2.9	190 58 12.1	5 14 52.9	5 17 42.0	7.1	5 40.1	18 3.3			
6	197 40 57.6	204 29 31.6	5 16 15.5	5 10 23.4	8.1	6 27.0	18 51.2			
7	211 24 2.1	218 24 30.6	4 59 59.1	4 44 59.6	9.1	7 16.1	19 41.8			
8	225 30 52.4	232 42 54.0	4 25 27.1	4 1 29.4	10.1	8 8.5	20 36.2			
9	240 0 13.6	247 22 20.3	3 33 20.7	3 1 22.3	11.1	9 5.0	21 34.9			
10	254 48 33.6	262 18 5.3	2 26 2.4	1 47 56.4	12.1	10 5.8	22 37.4			
11	269 49 58.8	277 23 11.8	N. 1 7 45.8	N. 0 26 17.0	13.1	11 9.6	23 41.9			
12	284 56 38.3	292 29 10.2	S. 0 15 40.2	S. 0 57 15.3	14.1	12 14.1	* *			
13	299 59 40.6	307 27 5.8	1 37 38.9	2 16 4.4	15.1	13 16.8	0 45.9			
14	314 50 26.7	322 8 53.4	2 51 50.5	3 24 22.1	16.1	14 15.7	1 46.8			
15	329 21 43.6	336 28 24.7	3 53 11.4	4 17 58.1	17.1	15 10.0	2 43.4			
16	343 28 34.8	350 22 1.2	4 38 28.3	4 54 35.2	18.1	16 0.2	3 35.6			
17	357 8 41.3	3 48 40.8	5 6 17.4	5 13 38.0	19.1	16 47.2	4 24.0			
18	10 22 11.3	16 49 33.3	5 16 44.2	5 15 45.6	20.1	17 32.1	5 9.8			
19	23 11 10.8	29 27 31.5	5 10 54.1	5 2 22.7	21.1	18 15.9	5 54.1			
20	35 39 6.7	41 46 29.1	4 50 25.4	4 35 16.9	22.1	18 59.7	6 37.8			
21	47 50 12.6	53 50 51.6	4 17 11.8	3 56 25.6	23.1	19 44.2	7 21.8			
22	59 49 0.1	65 45 11.4	3 33 13.5	3 7 51.1	24.1	20 29.8	8 6.8			
23	71 39 57.7	77 33 49.7	2 40 34.2	2 11 39.0	25.1	21 17.0	8 53.2			
24	83 27 16.5	89 20 45.0	1 41 22.4	1 10 1.5	26.1	22 5.4	9 41.1			
25	95 14 40.3	101 9 26.4	S. 0 37 54.2	S. 0 5 18.9	27.1	22 54.7	10 30.0			
26	107 5 23.2	113 2 50.2	N. 0 27 24.8	N. 0 59 57.3	28.1	23 44.1	11 19.4			
27	119 2 4.4	125 3 21.3	1 31 58.4	2 3 7.1	29.1	* *	12 8.6			
28	131 6 54.3	137 12 55.9	2 33 2.5	3 1 23.8	0.5	0 33.0	12 57.0			
29	143 21 37.1	149 33 7.9	3 27 50.0	3 52 0.6	1.5	1 20.8	13 44.2			
30	155 47 37.7	162 5 15.3	4 13 36.2	4 32 18.0	2.5	2 7.4	14 30.4			
31	168 26 9.2	174 50 28.3	4 47 48.4	4 59 51.7	3.5	2 53.2	15 15.8			
32	181 18 20.6	187 49 54.8	N. 5 8 13.3	N. 5 12 41.1	4.5	3 38.5	16 1.3			

The Moon's Longitude and Latitude are from HANSEN'S Tables direct; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 1.					WEDNESDAY 3.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	9 42 44	20.907	N.19 17 55.6	66.03	0	10 48 4.07	20.132	N.12 24 39.5	103.88
1	9 11 47.83	20.890	19 11 16.7	66.95	1	10 50 4.83	20.123	12 14 14.3	104.51
2	9 13 53.12	20.872	19 4 32.2	67.87	2	10 52 5.54	20.113	12 3 45.4	105.13
3	9 15 58.29	20.853	18 57 42.3	68.78	3	10 54 6.18	20.102	11 53 12.7	105.77
4	9 18 3.36	20.836	18 50 46.9	69.69	4	10 56 6.76	20.093	11 42 36.2	106.38
5	9 20 8.32	20.818	18 43 46.0	70.59	5	10 58 7.29	20.083	11 31 56.1	106.98
6	9 22 13.17	20.799	18 36 39.8	71.48	6	11 0 7.76	20.075	11 21 12.4	107.58
7	9 24 17.91	20.781	18 29 28.3	72.37	7	11 2 8.19	20.067	11 10 25.1	108.18
8	9 26 22.54	20.763	18 22 11.4	73.26	8	11 4 8.56	20.058	10 59 34.2	108.78
9	9 28 27.06	20.745	18 14 49.2	74.13	9	11 6 8.89	20.052	10 48 39.8	109.36
10	9 30 31.48	20.727	18 7 21.8	75.01	10	11 8 9.18	20.045	10 37 41.9	109.93
11	9 32 35.78	20.708	17 59 49.1	75.89	11	11 10 9.43	20.038	10 26 40.6	110.50
12	9 34 39.98	20.691	17 52 11.1	76.76	12	11 12 9.64	20.032	10 15 35.9	111.06
13	9 36 44.07	20.672	17 44 28.0	77.61	13	11 14 9.81	20.026	10 4 27.9	111.61
14	9 38 48.04	20.653	17 36 39.8	78.46	14	11 16 9.95	20.022	9 53 16.6	112.16
15	9 40 51.91	20.636	17 28 46.5	79.31	15	11 18 10.07	20.017	9 42 2.0	112.70
16	9 42 55.67	20.618	17 20 48.1	80.15	16	11 20 10.15	20.012	9 30 44.2	113.23
17	9 44 59.32	20.600	17 12 44.7	80.98	17	11 22 10.21	20.008	9 19 23.2	113.77
18	9 47 2.87	20.583	17 4 36.3	81.82	18	11 24 10.25	20.005	9 7 59.0	114.28
19	9 49 6.31	20.564	16 56 22.9	82.64	19	11 26 10.27	20.002	8 56 31.8	114.78
20	9 51 9.64	20.546	16 48 4.6	83.46	20	11 28 10.27	19.999	8 45 1.6	115.29
21	9 53 12.86	20.528	16 39 41.4	84.28	21	11 30 10.26	19.998	8 33 28.3	115.80
22	9 55 15.08	20.512	16 31 13.3	85.08	22	11 32 10.25	19.997	8 21 52.0	116.28
23	9 57 19.00	20.495	N.16 22 40.4	85.88	23	11 34 10.22	19.996	N. 8 10 12.9	116.77
TUESDAY 2.					THURSDAY 4.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	9 59 21.92	20.478	N.16 14 2.8	86.67	0	11 36 10.20	19.997	N. 7 58 30.8	117.25
1	10 1 24.73	20.461	16 5 20.4	87.46	1	11 38 10.18	19.997	7 46 45.9	117.71
2	10 3 27.45	20.444	15 56 33.3	88.24	2	11 40 10.16	19.997	7 34 58.3	118.17
3	10 5 30.06	20.427	15 47 41.5	89.02	3	11 42 10.14	19.998	7 23 7.9	118.63
4	10 7 32.57	20.410	15 38 45.1	89.79	4	11 44 10.13	20.000	7 11 14.8	119.07
5	10 9 34.98	20.394	15 29 44.0	90.56	5	11 46 10.14	20.003	6 59 19.1	119.50
6	10 11 37.30	20.378	15 20 38.4	91.31	6	11 48 10.16	20.006	6 47 20.8	119.93
7	10 13 39.52	20.363	15 11 28.3	92.06	7	11 50 10.21	20.010	6 35 19.9	120.37
8	10 15 41.65	20.348	15 2 13.7	92.81	8	11 52 10.28	20.013	6 23 16.4	120.78
9	10 17 43.69	20.332	14 52 54.6	93.55	9	11 54 10.37	20.018	6 11 10.5	121.18
10	10 19 45.63	20.316	14 43 31.1	94.28	10	11 56 10.49	20.023	5 59 2.2	121.58
11	10 21 47.48	20.301	14 34 3.2	95.02	11	11 58 10.65	20.029	5 46 51.5	121.97
12	10 23 49.24	20.287	14 24 30.9	95.73	12	12 0 10.84	20.036	5 34 38.6	122.35
13	10 25 50.92	20.273	14 14 54.4	96.44	13	12 2 11.08	20.043	5 22 23.3	122.73
14	10 27 52.51	20.258	14 5 13.6	97.15	14	12 4 11.36	20.051	5 10 5.8	123.10
15	10 29 54.01	20.244	13 55 28.6	97.85	15	12 6 11.69	20.059	4 57 46.1	123.47
16	10 31 55.44	20.231	13 45 39.4	98.55	16	12 8 12.07	20.068	4 45 24.2	123.83
17	10 33 56.78	20.217	13 35 46.0	99.23	17	12 10 12.50	20.077	4 33 0.2	124.17
18	10 35 58.04	20.204	13 25 48.6	99.92	18	12 12 12.99	20.088	4 20 34.2	124.50
19	10 37 59.23	20.192	13 15 47.0	100.60	19	12 14 13.55	20.098	4 8 6.2	124.83
20	10 40 0.34	20.179	13 5 41.4	101.27	20	12 16 14.17	20.109	3 55 36.3	125.15
21	10 42 1.38	20.168	12 55 31.8	101.93	21	12 18 14.86	20.122	3 43 4.4	125.47
22	10 44 2.35	20.156	12 45 18.3	102.58	22	12 20 15.63	20.134	3 30 30.7	125.77
23	10 46 3.25	20.143	12 35 0.8	103.23	23	12 22 16.47	20.148	3 17 55.2	126.06
24	10 48 4.07	20.132	N.12 24 39.5	103.88	24	12 24 17.40	20.162	N. 3 5 18.0	126.34

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 5.					SUNDAY 7.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 24 17.40	20.162	N. 3 5 18.0	126.34	0	14 35 8.09	21.642	S. 7 16 21.6	128.64
1	12 26 18.41	20.176	2 52 39.1	126.63	1	14 6 8.08	21.689	7 29 12.8	128.41
2	12 28 19.51	20.192	2 39 58.5	126.90	2	14 8 18.36	21.738	7 42 2.5	128.16
3	12 30 20.71	20.208	2 27 16.3	127.16	3	14 10 28.93	21.787	7 54 50.7	127.90
4	12 32 22.00	20.223	2 14 32.6	127.41	4	14 12 39.80	21.837	8 7 37.3	127.63
5	12 34 23.39	20.241	2 1 47.4	127.66	5	14 14 50.97	21.888	8 20 22.3	127.35
6	12 36 24.89	20.258	1 49 0.7	127.89	6	14 17 2.45	21.939	8 33 5.5	127.05
7	12 38 26.49	20.277	1 36 12.7	128.12	7	14 19 14.24	21.991	8 45 46.9	126.73
8	12 40 28.21	20.297	1 23 23.3	128.33	8	14 21 26.34	22.043	8 58 26.3	126.41
9	12 42 30.05	20.317	1 10 32.7	128.53	9	14 23 38.76	22.097	9 11 3.8	126.08
10	12 44 32.01	20.338	0 57 40.9	128.73	10	14 25 51.50	22.151	9 23 39.2	125.72
11	12 46 34.10	20.358	0 44 47.9	128.93	11	14 28 4.57	22.205	9 36 12.4	125.34
12	12 48 36.31	20.380	0 31 53.8	129.11	12	14 30 17.96	22.260	9 48 43.3	124.96
13	12 50 38.66	20.403	0 18 58.6	129.28	13	14 32 31.69	22.316	10 1 11.9	124.57
14	12 52 41.15	20.427	N. 0 6 2.4	129.44	14	14 34 45.75	22.372	10 13 38.1	124.15
15	12 54 43.78	20.450	S. 0 6 54.7	129.59	15	14 37 0.15	22.429	10 26 1.7	123.72
16	12 56 46.55	20.475	0 19 52.7	129.73	16	14 39 14.90	22.487	10 38 22.7	123.28
17	12 58 49.48	20.501	0 32 51.5	129.87	17	14 41 29.99	22.544	10 50 41.0	122.83
18	13 0 52.56	20.527	0 45 51.1	130.00	18	14 43 45.43	22.603	11 2 56.6	122.35
19	13 2 55.80	20.554	0 58 51.5	130.11	19	14 46 1.22	22.662	11 15 9.2	121.86
20	13 4 59.21	20.582	1 11 52.4	130.20	20	14 48 17.37	22.722	11 27 18.9	121.35
21	13 7 2.78	20.609	1 24 53.9	130.30	21	14 50 33.88	22.782	11 39 25.4	120.83
22	13 9 6.52	20.638	1 37 56.0	130.38	22	14 52 50.75	22.843	11 51 28.8	120.30
23	13 11 10.44	20.668	S. 1 50 58.5	130.45	23	14 55 7.99	22.903	S. 12 3 29.0	119.75
SATURDAY 6.					MONDAY 8.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	13 13 14.54	20.698	S. 2 4 1.4	130.52	0	14 57 25.59	22.964	S. 12 15 25.8	119.18
1	13 15 18.82	20.730	2 17 4.7	130.57	1	14 59 43.56	23.027	12 27 19.2	118.60
2	13 17 23.30	20.762	2 30 8.2	130.61	2	15 2 1.91	23.089	12 39 9.0	117.99
3	13 19 27.96	20.793	2 43 12.0	130.64	3	15 4 20.63	23.153	12 50 55.1	117.38
4	13 21 32.82	20.827	2 56 15.9	130.66	4	15 6 39.74	23.216	13 2 37.5	116.75
5	13 23 37.89	20.862	3 9 19.9	130.67	5	15 8 59.22	23.278	13 14 16.1	116.11
6	13 25 43.16	20.896	3 22 23.9	130.67	6	15 11 19.08	23.343	13 25 50.8	115.44
7	13 27 48.64	20.932	3 35 27.9	130.66	7	15 13 39.34	23.408	13 37 21.4	114.75
8	13 29 54.34	20.968	3 48 31.8	130.63	8	15 15 59.98	23.473	13 48 47.8	114.05
9	13 32 0.25	21.004	4 1 35.5	130.59	9	15 18 21.01	23.538	14 0 10.0	113.34
10	13 34 6.39	21.042	4 14 38.9	130.55	10	15 20 42.43	23.603	14 11 27.9	112.62
11	13 36 12.75	21.079	4 27 42.1	130.49	11	15 23 4.24	23.668	14 22 41.4	111.87
12	13 38 19.34	21.118	4 40 44.8	130.42	12	15 25 26.45	23.735	14 33 50.3	111.10
13	13 40 26.17	21.158	4 53 47.1	130.33	13	15 27 49.06	23.801	14 44 54.6	110.32
14	13 42 33.24	21.199	5 6 48.8	130.24	14	15 30 12.06	23.868	14 55 54.1	109.51
15	13 44 40.56	21.240	5 19 50.0	130.14	15	15 32 35.47	23.935	15 6 48.7	108.69
16	13 46 48.12	21.282	5 32 50.5	130.02	16	15 34 59.28	24.002	15 17 38.4	107.86
17	13 48 55.94	21.324	5 45 50.2	129.89	17	15 37 23.49	24.068	15 28 23.0	107.00
18	13 51 4.01	21.368	5 58 49.2	129.75	18	15 39 48.10	24.136	15 39 2.4	106.13
19	13 53 12.35	21.412	6 11 47.2	129.59	19	15 42 13.12	24.203	15 49 36.6	105.25
20	13 55 20.95	21.456	6 24 44.3	129.43	20	15 44 38.54	24.270	16 0 5.4	104.34
21	13 57 29.82	21.501	6 37 40.4	129.26	21	15 47 4.36	24.338	16 10 28.7	103.43
22	13 59 38.96	21.547	6 50 35.4	129.06	22	15 49 30.59	24.406	16 20 46.5	102.48
23	14 1 48.38	21.594	7 3 29.1	128.85	23	15 51 57.23	24.473	16 30 58.5	101.53
24	14 3 58.09	21.642	S. 7 16 21.6	128.64	24	15 54 24.26	24.539	S. 16 41 4.8	100.56

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 9.					THURSDAY 11.				
0	15 54 24.26	24.539	S. 16 41 4.8	100.56	0	17 59 15.28	27.182	S. 22 19 22.8	34.63
1	15 56 51.70	24.608	16 51 5.2	99.56	1	18 1 58.46	27.210	22 22 45.5	32.93
2	15 59 19.55	24.676	17 0 59.5	98.55	2	18 4 41.80	27.238	22 25 57.9	31.23
3	16 1 47.81	24.743	17 10 47.8	97.53	3	18 7 25.31	27.265	22 29 0.2	29.52
4	16 4 16.47	24.810	17 20 29.8	96.48	4	18 10 8.98	27.290	22 31 52.2	27.80
5	16 6 45.53	24.878	17 30 5.5	95.41	5	18 12 52.79	27.313	22 34 33.8	26.08
6	16 9 15.00	24.944	17 39 34.7	94.33	6	18 15 36.73	27.333	22 37 5.1	24.35
7	16 11 44.86	25.011	17 48 57.4	93.23	7	18 18 20.79	27.353	22 39 26.0	22.62
8	16 14 15.13	25.078	17 58 13.5	92.13	8	18 21 4.97	27.373	22 41 36.5	20.88
9	16 16 45.80	25.144	18 7 22.9	90.99	9	18 23 49.26	27.389	22 43 36.5	19.13
10	16 19 16.86	25.210	18 16 25.4	89.83	10	18 26 33.64	27.404	22 45 26.0	17.38
11	16 21 48.32	25.275	18 25 20.9	88.66	11	18 29 18.11	27.418	22 47 5.0	15.63
12	16 24 20.16	25.340	18 34 9.3	87.48	12	18 32 2.66	27.430	22 48 33.5	13.87
13	16 26 52.40	25.406	18 42 50.6	86.28	13	18 34 47.27	27.439	22 49 51.4	12.10
14	16 29 25.03	25.471	18 51 24.6	85.06	14	18 37 31.93	27.448	22 50 58.7	10.33
15	16 31 58.05	25.535	18 59 51.3	83.83	15	18 40 16.64	27.454	22 51 55.4	8.58
16	16 34 31.45	25.598	19 8 10.5	82.57	16	18 43 1.38	27.459	22 52 41.6	6.81
17	16 37 5.23	25.661	19 16 22.1	81.30	17	18 45 46.15	27.463	22 53 17.1	5.03
18	16 39 39.38	25.723	19 24 26.1	80.02	18	18 48 30.93	27.464	22 53 42.0	3.27
19	16 42 13.91	25.785	19 32 22.3	78.71	19	18 51 15.72	27.464	22 53 56.3	1.49
20	16 44 48.80	25.847	19 40 10.6	77.39	20	18 54 0.50	27.462	22 53 59.9	0.28
21	16 47 24.07	25.908	19 47 51.0	76.06	21	18 56 45.26	27.458	22 53 53.0	2.03
22	16 49 59.69	25.967	19 55 23.3	74.70	22	18 59 29.99	27.453	22 53 35.5	3.81
23	16 52 35.67	26.027	S. 20 2 47.4	73.33	23	19 2 14.69	27.446	S. 22 53 7.3	5.58
WEDNESDAY 10.					FRIDAY 12.				
0	16 55 12.01	26.086	S. 20 10 3.2	71.94	0	19 4 59.34	27.437	S. 22 52 28.6	7.33
1	16 57 48.70	26.143	20 17 10.7	70.55	1	19 7 43.93	27.426	22 51 39.3	9.10
2	17 0 25.73	26.200	20 24 9.8	69.13	2	19 10 28.45	27.413	22 50 39.4	10.87
3	17 3 3.10	26.256	20 31 0.3	67.70	3	19 13 12.88	27.398	22 49 28.9	12.62
4	17 5 40.80	26.311	20 37 42.2	66.25	4	19 15 57.23	27.383	22 48 8.0	14.37
5	17 8 18.83	26.366	20 44 15.3	64.79	5	19 18 41.48	27.366	22 46 36.5	16.13
6	17 10 57.19	26.419	20 50 39.7	63.32	6	19 21 25.62	27.347	22 44 54.5	17.87
7	17 13 35.86	26.471	20 56 55.2	61.83	7	19 24 9.64	27.327	22 43 2.1	19.60
8	17 16 14.84	26.523	21 3 1.7	60.33	8	19 26 53.54	27.304	22 40 59.3	21.33
9	17 18 54.13	26.573	21 8 59.2	58.82	9	19 29 37.29	27.279	22 38 46.1	23.06
10	17 21 33.72	26.623	21 14 47.5	57.29	10	19 32 20.89	27.254	22 36 22.6	24.78
11	17 24 13.60	26.670	21 20 26.7	55.75	11	19 35 4.34	27.228	22 33 48.8	26.49
12	17 26 53.76	26.718	21 25 56.5	54.18	12	19 37 47.62	27.198	22 31 4.7	28.20
13	17 29 34.21	26.763	21 31 16.9	52.62	13	19 40 30.72	27.168	22 28 10.4	29.90
14	17 32 14.92	26.808	21 36 27.9	51.03	14	19 43 13.63	27.136	22 25 5.9	31.59
15	17 34 55.90	26.851	21 41 29.3	49.43	15	19 45 56.35	27.103	22 21 51.3	33.28
16	17 37 37.13	26.893	21 46 21.1	47.83	16	19 48 38.86	27.067	22 18 26.6	34.95
17	17 40 18.62	26.934	21 51 3.3	46.23	17	19 51 21.15	27.031	22 14 51.9	36.61
18	17 43 0.34	26.973	21 55 35.8	44.59	18	19 54 3.23	26.993	22 11 7.3	38.26
19	17 45 42.30	27.012	21 59 58.4	42.95	19	19 56 45.07	26.954	22 7 12.8	39.90
20	17 48 24.48	27.048	22 4 11.2	41.31	20	19 59 26.68	26.913	22 3 8.5	41.53
21	17 51 6.88	27.083	22 8 14.1	39.66	21	20 2 8.03	26.871	21 58 54.4	43.16
22	17 53 49.48	27.117	22 12 7.1	37.99	22	20 4 49.13	26.828	21 54 30.6	44.78
23	17 56 32.28	27.150	22 15 50.0	36.31	23	20 7 29.97	26.784	21 49 57.1	46.38
24	17 59 15.28	27.182	S. 22 19 22.8	34.63	24	20 10 10.54	26.738	S. 21 45 14.1	47.96

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 13.					MONDAY 15.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	20 10 10.54	26.738	S. 21 45 14.1	47.96	0	22 11 32.50	23.645	S. 15 20 27.7	105.98
1	20 12 50.82	26.690	21 40 21.6	49.53	1	22 13 54.16	23.574	15 9 49.5	106.76
2	20 15 30.82	26.642	21 35 19.8	51.08	2	22 16 15.39	23.504	14 59 6.6	107.53
3	20 18 10.52	26.592	21 30 8.6	52.64	3	22 18 36.21	23.435	14 48 19.1	108.29
4	20 20 49.92	26.541	21 24 48.1	54.17	4	22 20 56.61	23.365	14 37 27.1	109.03
5	20 23 29.01	26.489	21 19 18.5	55.69	5	22 23 16.59	23.296	14 26 30.7	109.75
6	20 26 7.79	26.436	21 13 39.8	57.21	6	22 25 36.16	23.228	14 15 30.1	110.46
7	20 28 46.24	26.382	21 7 52.0	58.71	7	22 27 55.32	23.158	14 4 25.2	111.15
8	20 31 24.37	26.327	21 1 55.3	60.18	8	22 30 14.06	23.090	13 53 16.3	111.82
9	20 34 2.16	26.271	20 55 49.8	61.64	9	22 32 32.40	23.023	13 42 3.4	112.47
10	20 36 39.62	26.214	20 49 35.6	63.10	10	22 34 50.33	22.954	13 30 46.7	113.11
11	20 39 16.73	26.156	20 43 12.6	64.54	11	22 37 7.85	22.887	13 19 26.1	113.74
12	20 41 53.49	26.097	20 36 41.1	65.96	12	22 39 24.97	22.820	13 8 1.8	114.34
13	20 44 29.89	26.037	20 30 1.1	67.37	13	22 41 41.69	22.754	12 56 34.0	114.93
14	20 47 5.93	25.976	20 23 12.7	68.76	14	22 43 58.02	22.688	12 45 2.6	115.51
15	20 49 41.60	25.914	20 16 16.0	70.14	15	22 46 13.95	22.622	12 33 27.9	116.06
16	20 52 16.90	25.853	20 9 11.0	71.50	16	22 48 29.48	22.557	12 21 49.9	116.61
17	20 54 51.83	25.790	20 1 58.0	72.83	17	22 50 44.63	22.493	12 10 8.6	117.13
18	20 57 26.38	25.726	19 54 37.0	74.17	18	22 52 59.39	22.428	11 58 24.3	117.64
19	21 0 0.54	25.662	19 47 8.0	75.48	19	22 55 13.77	22.365	11 46 36.9	118.15
20	21 2 34.32	25.597	19 39 31.3	76.77	20	22 57 27.77	22.302	11 34 46.5	118.63
21	21 5 7.70	25.531	19 31 46.8	78.05	21	22 59 41.39	22.238	11 22 53.3	119.09
22	21 7 40.69	25.465	19 23 54.7	79.32	22	23 1 54.63	22.177	11 10 57.4	119.53
23	21 10 13.28	25.398	S. 19 15 55.0	80.56	23	23 4 7.51	22.115	S. 10 58 58.9	119.98
SUNDAY 14.					TUESDAY 16.				
0	21 12 45.47	25.331	S. 19 7 48.0	81.78	0	23 6 20.01	22.053	S. 10 46 57.7	120.40
1	21 15 17.25	25.263	18 59 33.7	82.99	1	23 8 32.15	21.994	10 34 54.1	120.81
2	21 17 48.63	25.195	18 51 12.1	84.18	2	23 10 43.94	21.934	10 22 48.0	121.20
3	21 20 19.59	25.126	18 42 43.5	85.35	3	23 12 55.36	21.874	10 10 39.7	121.58
4	21 22 50.14	25.058	18 34 7.9	86.52	4	23 15 6.43	21.816	9 58 29.1	121.95
5	21 25 20.28	24.988	18 25 25.3	87.66	5	23 17 17.15	21.758	9 46 16.3	122.30
6	21 27 50.00	24.918	18 16 36.0	88.78	6	23 19 27.52	21.700	9 34 1.5	122.63
7	21 30 19.30	24.848	18 7 40.0	89.88	7	23 21 37.55	21.643	9 21 44.7	122.96
8	21 32 48.18	24.778	17 58 37.4	90.97	8	23 23 47.24	21.587	9 9 26.0	123.27
9	21 35 16.64	24.708	17 49 28.4	92.04	9	23 25 56.59	21.531	8 57 5.5	123.56
10	21 37 44.67	24.637	17 40 12.9	93.10	10	23 28 5.61	21.477	8 44 43.3	123.84
11	21 40 12.28	24.567	17 30 51.2	94.13	11	23 30 14.31	21.422	8 32 19.4	124.12
12	21 42 39.47	24.496	17 21 23.4	95.14	12	23 32 22.67	21.368	8 19 53.9	124.38
13	21 45 6.23	24.425	17 11 49.5	96.14	13	23 34 30.72	21.316	8 7 26.9	124.62
14	21 47 32.57	24.354	17 2 9.7	97.13	14	23 36 38.46	21.263	7 54 58.5	124.84
15	21 49 58.48	24.283	16 52 24.0	98.09	15	23 38 45.88	21.211	7 42 28.8	125.06
16	21 52 23.97	24.213	16 42 32.6	99.03	16	23 40 52.99	21.160	7 29 57.8	125.28
17	21 54 49.03	24.141	16 32 35.6	99.97	17	23 42 59.80	21.110	7 17 25.5	125.47
18	21 57 13.66	24.069	16 22 33.0	100.88	18	23 45 6.31	21.061	7 4 52.2	125.64
19	21 59 37.86	23.998	16 12 25.1	101.77	19	23 47 12.53	21.012	6 52 17.8	125.82
20	22 2 1.64	23.928	16 2 11.8	102.65	20	23 49 18.45	20.963	6 39 42.4	125.98
21	22 4 24.99	23.857	15 51 53.3	103.51	21	23 51 24.08	20.915	6 27 6.1	126.13
22	22 6 47.92	23.786	15 41 29.7	104.34	22	23 53 29.43	20.868	6 14 28.9	126.26
23	22 9 10.42	23.715	15 31 1.2	105.17	23	23 55 34.50	20.822	6 1 51.0	126.38
24	22 11 32.50	23.645	S. 15 20 27.7	105.98	24	23 57 39.29	20.776	S. 5 49 12.4	126.48

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 17.					FRIDAY 19.				
0	23 57 39 ²⁹	20 ⁷⁷⁶	S. 5 49 12 ⁴	126 ⁴⁸	0	1 33 28 ⁷²	19 ⁴¹⁸	N. 4 11 47 ³	120 ⁵⁸
1	23 59 43 ⁸¹	20 ⁷³⁸	5 36 33 ²	126 ⁵⁸	1	1 35 25 ¹⁹	19 ⁴⁰⁶	4 23 49 ⁸	120 ²⁵
2	0 1 48 ⁰⁷	20 ⁶⁸⁸	5 23 53 ⁴	126 ⁶⁸	2	1 37 21 ⁵⁹	19 ³⁹⁵	4 35 50 ³	119 ⁹²
3	0 3 52 ⁰⁶	20 ⁶⁴⁴	5 11 13 ¹	126 ⁷⁶	3	1 39 17 ⁹³	19 ³⁸⁵	4 47 48 ⁸	119 ⁵⁹
4	0 5 55 ⁸⁰	20 ⁶⁰²	4 58 32 ³	126 ⁸³	4	1 41 14 ²¹	19 ³⁷⁵	4 59 45 ⁴	119 ²⁵
5	0 7 59 ²⁸	20 ⁵⁵⁹	4 45 51 ²	126 ⁸⁸	5	1 43 10 ⁴³	19 ³⁶⁶	5 11 39 ⁸	118 ⁹⁰
6	0 10 2 ⁵¹	20 ⁵¹⁸	4 33 9 ⁸	126 ⁹²	6	1 45 6 ⁶⁰	19 ³⁵⁸	5 23 32 ²	118 ⁵⁵
7	0 12 5 ⁴⁹	20 ⁴⁷⁸	4 20 28 ²	126 ⁹⁶	7	1 47 2 ⁷²	19 ³⁴⁹	5 35 22 ⁴	118 ¹⁹
8	0 14 8 ²⁴	20 ⁴³⁸	4 7 46 ³	126 ⁹⁸	8	1 48 58 ⁷⁹	19 ³⁴²	5 47 10 ⁵	117 ⁸²
9	0 16 10 ⁷⁴	20 ³⁹⁸	3 55 4 ⁴	126 ⁹⁹	9	1 50 54 ⁸²	19 ³³⁵	5 58 56 ³	117 ⁴⁴
10	0 18 13 ⁰¹	20 ³⁶⁰	3 42 22 ⁴	127 ⁰⁰	10	1 52 50 ⁸¹	19 ³²⁹	6 10 39 ⁸	117 ⁰⁷
11	0 20 15 ⁰⁶	20 ³²³	3 29 40 ⁴	126 ⁹⁹	11	1 54 46 ⁷⁷	19 ³²³	6 22 21 ¹	116 ⁶⁸
12	0 22 16 ⁸⁸	20 ²⁸⁵	3 16 58 ⁵	126 ⁹⁸	12	1 56 42 ⁶⁹	19 ³¹⁸	6 34 0 ⁰	116 ²⁹
13	0 24 18 ⁴⁸	20 ²⁴⁹	3 4 16 ⁷	126 ⁹⁵	13	1 58 38 ⁵⁹	19 ³¹⁴	6 45 36 ⁶	115 ⁹⁰
14	0 26 19 ⁸⁷	20 ²¹³	2 51 35 ¹	126 ⁹¹	14	2 0 34 ⁴⁶	19 ³¹¹	6 57 10 ⁸	115 ⁴⁹
15	0 28 21 ⁰⁴	20 ¹⁷⁸	2 38 53 ⁸	126 ⁸⁷	15	2 2 30 ³²	19 ³⁰⁸	7 8 42 ⁵	115 ⁰⁸
16	0 30 22 ⁰¹	20 ¹⁴⁵	2 26 12 ⁷	126 ⁸²	16	2 4 26 ¹⁶	19 ³⁰⁵	7 20 11 ⁷	114 ⁶⁶
17	0 32 22 ⁷⁸	20 ¹¹¹	2 13 32 ⁰	126 ⁷⁴	17	2 6 21 ⁹⁸	19 ³⁰³	7 31 38 ⁴	114 ²⁴
18	0 34 23 ³⁴	20 ⁰⁷⁸	2 0 51 ⁸	126 ⁶⁷	18	2 8 17 ⁷⁹	19 ³⁰²	7 43 2 ⁶	113 ⁸²
19	0 36 23 ⁷¹	20 ⁰⁴⁶	1 48 12 ⁰	126 ⁵⁹	19	2 10 13 ⁶⁰	19 ³⁰¹	7 54 24 ²	113 ³⁸
20	0 38 23 ⁸⁹	20 ⁰¹⁵	1 35 32 ⁷	126 ⁵⁰	20	2 12 9 ⁴⁰	19 ³⁰⁰	8 5 43 ¹	112 ⁹³
21	0 40 23 ⁸⁹	19 ⁹⁸⁴	1 22 54 ⁰	126 ⁴⁰	21	2 14 5 ²⁰	19 ³⁰¹	8 16 59 ³	112 ⁴⁸
22	0 42 23 ⁷⁰	19 ⁹⁵⁴	1 10 15 ⁹	126 ²⁸	22	2 16 1 ⁰¹	19 ³⁰²	8 28 12 ⁸	112 ⁰³
23	0 44 23 ³⁴	19 ⁹²⁴	S. 0 57 38 ⁶	126 ¹⁶	23	2 17 56 ⁸²	19 ³⁰³	N. 8 39 23 ⁶	111 ⁵⁷
THURSDAY 18.					SATURDAY 20.				
0	0 46 22 ⁷⁹	19 ⁸⁹⁵	S. 0 45 2 ⁰	126 ⁰³	0	2 19 52 ⁶⁴	19 ³⁰⁴	N. 8 50 31 ⁶	111 ¹⁰
1	0 48 22 ⁰⁸	19 ⁸⁶⁸	0 32 26 ²	125 ⁹⁰	1	2 21 48 ⁴⁷	19 ³⁰⁷	9 1 36 ⁸	110 ⁶³
2	0 50 21 ²¹	19 ⁸⁴²	0 19 51 ²	125 ⁷⁶	2	2 23 44 ³²	19 ³¹⁰	9 12 39 ¹	110 ¹⁴
3	0 52 20 ¹⁸	19 ⁸¹⁵	S. 0 7 17 ¹	125 ⁶¹	3	2 25 40 ¹⁹	19 ³¹³	9 23 38 ⁵	109 ⁶⁵
4	0 54 18 ⁹⁹	19 ⁷⁸⁹	N. 0 5 16 ¹	125 ⁴⁴	4	2 27 36 ⁰⁸	19 ³¹⁸	9 34 34 ⁹	109 ¹⁶
5	0 56 17 ⁶⁵	19 ⁷⁶⁴	0 17 48 ²	125 ²⁷	5	2 29 32 ⁰⁰	19 ³²³	9 45 28 ⁴	108 ⁶⁷
6	0 58 16 ¹⁶	19 ⁷⁴⁰	0 30 19 ³	125 ⁰⁹	6	2 31 27 ⁹⁵	19 ³²⁷	9 56 18 ⁹	108 ¹⁷
7	1 0 14 ⁵³	19 ⁷¹⁷	0 42 49 ³	124 ⁹¹	7	2 33 23 ⁹²	19 ³³²	10 7 6 ⁴	107 ⁶⁶
8	1 2 12 ⁷⁶	19 ⁶⁹³	0 55 18 ²	124 ⁷²	8	2 35 19 ⁹³	19 ³³⁸	10 17 50 ⁸	107 ¹⁴
9	1 4 10 ⁸⁵	19 ⁶⁷¹	1 7 45 ⁹	124 ⁵²	9	2 37 15 ⁹⁸	19 ³⁴⁵	10 28 32 ¹	106 ⁶²
10	1 6 8 ⁸¹	19 ⁶⁴⁹	1 20 12 ⁴	124 ³¹	10	2 39 12 ⁰⁷	19 ³⁵²	10 39 10 ²	106 ⁰⁹
11	1 8 6 ⁶⁴	19 ⁶²⁸	1 32 37 ⁶	124 ⁰⁸	11	2 41 8 ²⁰	19 ³⁵⁹	10 49 45 ²	105 ⁵⁷
12	1 10 4 ³⁵	19 ⁶⁰⁸	1 45 1 ⁴	123 ⁸⁶	12	2 43 4 ³⁸	19 ³⁶⁸	11 0 17 ⁰	105 ⁰³
13	1 12 1 ⁹⁴	19 ⁵⁸⁹	1 57 23 ⁹	123 ⁶³	13	2 45 0 ⁶¹	19 ³⁷⁶	11 10 45 ⁵	104 ⁴⁸
14	1 13 59 ⁴²	19 ⁵⁷⁰	2 9 44 ⁹	123 ³⁸	14	2 46 56 ⁸⁹	19 ³⁸⁴	11 21 10 ⁸	103 ⁹³
15	1 15 56 ⁷⁸	19 ⁵⁵²	2 22 4 ⁵	123 ¹⁴	15	2 48 53 ²²	19 ³⁹³	11 31 32 ⁷	103 ³⁸
16	1 17 54 ⁰⁴	19 ⁵³⁴	2 34 22 ⁶	122 ⁸⁸	16	2 50 49 ⁶¹	19 ⁴⁰³	11 41 51 ³	102 ⁸²
17	1 19 51 ¹⁹	19 ⁵¹⁸	2 46 39 ¹	122 ⁶²	17	2 52 46 ⁰⁶	19 ⁴¹³	11 52 6 ⁵	102 ²⁵
18	1 21 48 ²⁵	19 ⁵⁰²	2 58 54 ⁰	122 ³⁴	18	2 54 42 ⁵⁷	19 ⁴²⁴	12 2 18 ³	101 ⁶⁸
19	1 23 45 ²¹	19 ⁴⁸⁶	3 11 7 ²	122 ⁰⁷	19	2 56 39 ¹⁵	19 ⁴³⁵	12 12 26 ⁷	101 ¹⁰
20	1 25 42 ⁰⁸	19 ⁴⁷¹	3 23 18 ⁸	121 ⁷⁸	20	2 58 35 ⁷⁹	19 ⁴⁴⁷	12 22 31 ⁵	100 ⁵¹
21	1 27 38 ⁸⁶	19 ⁴⁵⁷	3 35 28 ⁶	121 ⁴⁹	21	3 0 32 ⁵¹	19 ⁴⁵⁹	12 32 32 ⁸	99 ⁹³
22	1 29 35 ⁵⁶	19 ⁴⁴³	3 47 36 ⁷	121 ¹⁹	22	3 2 29 ³⁰	19 ⁴⁷²	12 42 30 ⁶	99 ³³
23	1 31 32 ¹⁷	19 ⁴³⁰	3 59 42 ⁹	120 ⁸⁸	23	3 4 26 ¹⁷	19 ⁴⁸⁴	12 52 24 ⁸	98 ⁷³
24	1 33 28 ⁷²	19 ⁴¹⁸	N. 4 11 47 ³	120 ⁵⁸	24	3 6 23 ¹¹	19 ⁴⁹⁷	N. 13 2 15 ⁴	98 ¹³

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 21.					TUESDAY 23.				
	<i>h m s</i>		<i>° ' "</i>	<i>"</i>		<i>h m s</i>		<i>° ' "</i>	<i>"</i>
0	3 623.11	19.497	N.13 2 15.4	98.13	0	4 42 4.52	20.455	N.19 32 39.2	62.43
1	3 8 20.13	19.511	13 12 2.3	97.51	1	4 44 7.32	20.478	19 38 51.2	61.55
2	3 10 17.24	19.525	13 21 45.5	96.89	2	4 46 10.26	20.501	19 44 57.8	60.67
3	3 12 14.43	19.538	13 31 25.0	96.27	3	4 48 13.33	20.524	19 50 59.2	59.79
4	3 14 11.70	19.553	13 41 0.7	95.63	4	4 50 16.55	20.548	19 56 55.3	58.90
5	3 16 9.07	19.569	13 50 32.6	95.00	5	4 52 19.91	20.572	20 2 46.0	58.00
6	3 18 6.53	19.584	14 0 0.7	94.36	6	4 54 23.41	20.594	20 8 31.3	57.09
7	3 20 4.08	19.599	14 9 24.9	93.72	7	4 56 27.04	20.618	20 14 11.1	56.18
8	3 22 1.72	19.616	14 18 45.3	93.07	8	4 58 30.82	20.641	20 19 45.5	55.28
9	3 23 59.47	19.633	14 28 1.7	92.40	9	5 0 34.73	20.663	20 25 14.4	54.36
10	3 25 57.31	19.649	14 37 14.1	91.73	10	5 2 38.78	20.687	20 30 37.8	53.44
11	3 27 55.26	19.667	14 46 22.5	91.07	11	5 4 42.97	20.709	20 35 55.7	52.52
12	3 29 53.31	19.684	14 55 26.9	90.40	12	5 6 47.29	20.732	20 41 8.0	51.58
13	3 31 51.47	19.702	15 4 27.3	89.72	13	5 8 51.75	20.754	20 46 14.7	50.65
14	3 33 49.73	19.719	15 13 23.5	89.03	14	5 10 56.34	20.777	20 51 15.8	49.71
15	3 35 48.10	19.738	15 22 15.6	88.34	15	5 13 1.07	20.800	20 56 11.2	48.76
16	3 37 46.59	19.757	15 31 3.6	87.64	16	5 15 5.94	20.822	21 1 0.9	47.82
17	3 39 45.18	19.775	15 39 47.3	86.93	17	5 17 10.93	20.843	21 5 45.0	46.87
18	3 41 43.89	19.795	15 48 26.8	86.23	18	5 19 16.05	20.865	21 10 23.3	45.90
19	3 43 42.72	19.814	15 57 2.1	85.52	19	5 21 21.31	20.887	21 14 55.8	44.93
20	3 45 41.66	19.834	16 5 33.0	84.79	20	5 23 26.69	20.908	21 19 22.5	43.97
21	3 47 40.73	19.854	16 13 59.6	84.07	21	5 25 32.20	20.929	21 23 43.4	43.00
22	3 49 39.91	19.874	16 22 21.9	83.34	22	5 27 37.84	20.950	21 27 58.5	42.03
23	3 51 39.22	19.894	N.16 30 39.7	82.60	23	5 29 43.60	20.971	N.21 32 7.7	41.04
MONDAY 22.					WEDNESDAY 24.				
	<i>h m s</i>		<i>° ' "</i>	<i>"</i>		<i>h m s</i>		<i>° ' "</i>	<i>"</i>
0	3 53 38.64	19.914	N.16 38 53.1	81.87	0	5 31 49.49	20.992	N.21 36 11.0	40.06
1	3 55 38.19	19.936	16 47 2.1	81.12	1	5 33 55.50	21.012	21 40 8.4	39.08
2	3 57 37.87	19.958	16 55 6.5	80.36	2	5 36 1.63	21.032	21 43 59.9	38.08
3	3 59 37.68	19.978	17 3 6.4	79.61	3	5 38 7.88	21.052	21 47 45.4	37.08
4	4 1 37.61	20.000	17 11 1.8	78.84	4	5 40 14.25	21.071	21 51 24.9	36.08
5	4 3 37.68	20.022	17 18 52.5	78.07	5	5 42 20.73	21.090	21 54 58.4	35.08
6	4 5 37.87	20.043	17 26 38.6	77.29	6	5 44 27.33	21.110	21 58 25.8	34.07
7	4 7 38.20	20.065	17 34 20.0	76.52	7	5 46 34.05	21.128	22 1 47.2	33.06
8	4 9 38.65	20.087	17 41 56.8	75.73	8	5 48 40.87	21.147	22 5 2.5	32.04
9	4 11 39.24	20.110	17 49 28.8	74.93	9	5 50 47.81	21.165	22 8 11.7	31.02
10	4 13 39.97	20.133	17 56 56.0	74.14	10	5 52 54.85	21.183	22 11 14.7	29.99
11	4 15 40.82	20.154	18 4 18.5	73.34	11	5 55 2.00	21.201	22 14 11.6	28.98
12	4 17 41.83	20.177	18 11 36.1	72.53	12	5 57 9.26	21.218	22 17 2.4	27.95
13	4 19 42.95	20.200	18 18 48.9	71.72	13	5 59 16.62	21.234	22 19 47.0	26.91
14	4 21 44.22	20.223	18 25 56.7	70.89	14	6 1 24.07	21.251	22 22 25.3	25.87
15	4 23 45.62	20.245	18 32 59.6	70.08	15	6 3 31.63	21.268	22 24 57.4	24.83
16	4 25 47.16	20.268	18 39 57.6	69.25	16	6 5 39.28	21.283	22 27 23.3	23.79
17	4 27 48.84	20.292	18 46 50.6	68.42	17	6 7 47.03	21.299	22 29 42.9	22.74
18	4 29 50.66	20.315	18 53 38.6	67.58	18	6 9 54.87	21.314	22 31 56.2	21.70
19	4 31 52.62	20.338	19 0 21.5	66.73	19	6 12 2.80	21.328	22 34 3.3	20.65
20	4 33 54.72	20.362	19 6 59.3	65.88	20	6 14 10.81	21.343	22 36 4.0	19.59
21	4 35 56.96	20.385	19 13 32.0	65.03	21	6 16 18.91	21.358	22 37 58.4	18.53
22	4 37 59.34	20.408	19 19 59.6	64.17	22	6 18 27.10	21.371	22 39 46.4	17.48
23	4 40 1.86	20.432	19 26 22.0	63.30	23	6 20 35.36	21.383	22 41 28.1	16.42
24	4 42 4.52	20.455	N.19 32 39.2	62.43	24	6 22 43.70	21.397	N.22 43 3.4	15.35

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 25.					SATURDAY 27.				
0	6 22 43.70	21.397	N.22 43 3.4	15.35	0	8 6 3.16	21.478	N.21 51 50.6	36.65
1	6 24 52.12	21.409	22 44 32.3	14.28	1	8 8 12.00	21.468	21 48 7.5	37.72
2	6 27 0.61	21.422	22 45 54.8	13.22	2	8 10 20.78	21.458	21 44 18.0	38.78
3	6 29 9.18	21.433	22 47 10.9	12.14	3	8 12 29.50	21.448	21 40 22.2	39.83
4	6 31 17.81	21.444	22 48 20.5	11.07	4	8 14 38.16	21.438	21 36 20.1	40.88
5	6 33 26.51	21.455	22 49 23.7	10.00	5	8 16 46.76	21.428	21 32 11.7	41.93
6	6 35 35.27	21.465	22 50 20.5	8.93	6	8 18 55.29	21.416	21 27 57.0	42.98
7	6 37 44.09	21.475	22 51 10.8	7.84	7	8 21 3.75	21.404	21 23 36.0	44.02
8	6 39 52.97	21.484	22 51 54.6	6.76	8	8 23 12.14	21.393	21 19 8.8	45.05
9	6 42 1.90	21.493	22 52 31.9	5.68	9	8 25 20.46	21.380	21 14 35.4	46.08
10	6 44 10.89	21.502	22 53 2.7	4.59	10	8 27 28.70	21.368	21 9 55.8	47.12
11	6 46 19.92	21.509	22 53 27.0	3.51	11	8 29 36.87	21.355	21 5 10.0	48.15
12	6 48 29.00	21.517	22 53 44.8	2.43	12	8 31 44.96	21.342	21 0 18.0	49.18
13	6 50 38.12	21.524	22 53 56.1	1.33	13	8 33 52.97	21.328	20 55 19.9	50.19
14	6 52 47.29	21.531	22 54 0.8	0.24	14	8 36 0.89	21.313	20 50 15.7	51.21
15	6 54 56.49	21.536	22 53 59.0	0.84	15	8 38 8.73	21.299	20 45 5.4	52.23
16	6 57 5.72	21.543	22 53 50.7	1.93	16	8 40 16.48	21.284	20 39 49.0	53.23
17	6 59 14.99	21.548	22 53 35.8	3.03	17	8 42 24.14	21.270	20 34 26.6	54.24
18	7 1 24.29	21.553	22 53 14.4	4.12	18	8 44 31.72	21.255	20 28 58.1	55.24
19	7 3 33.62	21.557	22 52 46.4	5.22	19	8 46 39.20	21.239	20 23 23.7	56.23
20	7 5 42.97	21.560	22 52 11.8	6.31	20	8 48 46.59	21.224	20 17 43.3	57.23
21	7 7 52.34	21.563	22 51 30.7	7.40	21	8 50 53.89	21.208	20 11 57.0	58.21
22	7 10 1.73	21.566	22 50 43.0	8.49	22	8 53 1.09	21.192	20 6 4.8	59.19
23	7 12 11.13	21.568	N.22 49 48.8	9.58	23	8 55 8.19	21.176	N.20 0 6.7	60.17
FRIDAY 26.					SUNDAY 28.				
0	7 14 20.55	21.571	N.22 48 48.0	10.68	0	8 57 15.20	21.159	N.19 54 2.8	61.13
1	7 16 29.98	21.573	22 47 40.7	11.77	1	8 59 22.10	21.143	19 47 53.1	62.11
2	7 18 39.42	21.573	22 46 26.8	12.87	2	9 1 28.91	21.126	19 41 37.5	63.08
3	7 20 48.86	21.573	22 45 6.3	13.96	3	9 3 35.61	21.108	19 35 16.2	64.03
4	7 22 58.30	21.573	22 43 39.3	15.04	4	9 5 42.21	21.091	19 28 49.2	64.98
5	7 25 7.74	21.573	22 42 5.8	16.13	5	9 7 48.70	21.073	19 22 16.5	65.93
6	7 27 17.18	21.573	22 40 25.7	17.23	6	9 9 55.09	21.056	19 15 38.0	66.88
7	7 29 26.62	21.572	22 38 39.0	18.33	7	9 12 1.37	21.038	19 8 54.0	67.81
8	7 31 36.04	21.568	22 36 45.8	19.42	8	9 14 7.55	21.020	19 2 4.3	68.74
9	7 33 45.44	21.566	22 34 46.0	20.51	9	9 16 13.61	21.002	18 55 9.1	69.67
10	7 35 54.83	21.564	22 32 39.7	21.59	10	9 18 19.57	20.984	18 48 8.3	70.59
11	7 38 4.21	21.561	22 30 26.9	22.68	11	9 20 25.42	20.966	18 41 2.0	71.50
12	7 40 13.56	21.557	22 28 7.5	23.77	12	9 22 31.16	20.948	18 33 50.3	72.41
13	7 42 22.89	21.553	22 25 41.7	24.85	13	9 24 36.79	20.928	18 26 33.1	73.32
14	7 44 32.19	21.548	22 23 9.3	25.93	14	9 26 42.30	20.910	18 19 10.5	74.22
15	7 46 41.46	21.543	22 20 30.5	27.02	15	9 28 47.71	20.892	18 11 42.5	75.12
16	7 48 50.70	21.538	22 17 45.1	28.10	16	9 30 53.00	20.873	18 4 9.1	76.00
17	7 50 59.91	21.532	22 14 53.3	29.17	17	9 32 58.18	20.853	17 56 30.5	76.88
18	7 53 9.08	21.525	22 11 55.1	30.24	18	9 35 3.24	20.834	17 48 46.6	77.75
19	7 55 18.21	21.518	22 8 50.4	31.32	19	9 37 8.19	20.816	17 40 57.5	78.63
20	7 57 27.29	21.510	22 5 39.3	32.39	20	9 39 13.03	20.798	17 33 3.1	79.49
21	7 59 36.33	21.503	22 2 21.7	33.47	21	9 41 17.76	20.778	17 25 3.6	80.34
22	8 1 45.33	21.495	21 58 57.7	34.53	22	9 43 22.37	20.759	17 16 59.0	81.18
23	8 3 54.27	21.486	21 55 27.3	35.59	23	9 45 26.87	20.740	17 8 49.4	82.03
24	8 6 3.16	21.478	N.21 51 50.6	36.65	24	9 47 31.25	20.721	N.17 0 34.6	82.88

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 29.					WEDNESDAY, 31.				
	^h ^m ^s		[°] ['] ["]	["]		^h ^m ^s		[°] ['] ["]	["]
0	9 47 31.25	20.721	N. 17 034.6	82.88	0	11 25 2.90	20.009	N. 8 59 20.9	114.83
1	9 49 35.52	20.702	16 52 14.8	83.71	1	11 27 2.93	20.002	8 47 50.5	115.31
2	9 51 39.67	20.683	16 43 50.1	84.53	2	11 29 2.92	19.995	8 36 17.2	115.78
3	9 53 43.71	20.664	16 35 20.5	85.34	3	11 31 2.87	19.988	8 24 41.1	116.25
4	9 55 47.64	20.646	16 26 46.0	86.16	4	11 33 2.78	19.982	8 13 2.2	116.71
5	9 57 51.46	20.627	16 18 6.6	86.97	5	11 35 2.66	19.978	8 1 20.6	117.15
6	9 59 55.16	20.608	16 9 22.4	87.77	6	11 37 2.51	19.973	7 49 36.4	117.59
7	10 1 58.75	20.589	16 0 33.4	88.56	7	11 39 2.33	19.968	7 37 49.5	118.03
8	10 4 2.23	20.571	15 51 39.7	89.34	8	11 41 2.13	19.964	7 26 0.1	118.45
9	10 6 5.60	20.553	15 42 41.3	90.12	9	11 43 1.90	19.960	7 14 8.1	118.87
10	10 8 8.86	20.534	15 33 38.3	90.89	10	11 45 1.65	19.958	7 2 13.6	119.28
11	10 10 12.01	20.515	15 24 30.6	91.66	11	11 47 1.39	19.953	6 50 16.7	119.68
12	10 12 15.04	20.497	15 15 18.4	92.41	12	11 49 1.11	19.953	6 38 17.5	120.07
13	10 14 17.07	20.480	15 6 1.7	93.16	13	11 51 0.82	19.952	6 26 15.9	120.45
14	10 16 20.80	20.463	14 56 40.5	93.91	14	11 53 0.53	19.951	6 14 12.1	120.83
15	10 18 23.52	20.444	14 47 14.8	94.65	15	11 55 0.23	19.949	6 2 6.0	121.19
16	10 20 26.13	20.427	14 37 44.7	95.38	16	11 56 59.92	19.949	5 49 57.8	121.55
17	10 22 28.64	20.410	14 28 10.3	96.10	17	11 58 59.62	19.950	5 37 47.4	121.90
18	10 24 31.05	20.393	14 18 31.5	96.82	18	12 0 59.32	19.952	5 25 35.0	122.24
19	10 26 33.36	20.377	14 8 48.5	97.53	19	12 2 59.04	19.953	5 13 20.5	122.58
20	10 28 35.57	20.359	13 59 1.2	98.23	20	12 4 58.76	19.953	5 1 4.0	122.90
21	10 30 37.67	20.343	13 49 9.8	98.92	21	12 6 58.50	19.958	4 48 45.7	123.22
22	10 32 39.68	20.327	13 39 14.2	99.61	22	12 8 58.25	19.960	4 36 25.4	123.53
23	10 34 41.59	20.311	N. 13 29 14.5	100.29	23	12 10 58.02	19.964	N. 4 24 3.3	123.83
TUESDAY 30.					THURSDAY, AUG. 1.				
	^h ^m ^s		[°] ['] ["]	["]		^h ^m ^s		[°] ['] ["]	["]
0	10 36 43.41	20.295	N. 13 19 10.7	100.97	0	12 12 57.82	19.969	N. 4 11 39.5	124.11
1	10 38 45.13	20.279	13 9 2.9	101.63					
2	10 40 46.76	20.264	12 58 51.2	102.28					
3	10 42 48.30	20.249	12 48 35.5	102.93					
4	10 44 49.75	20.234	12 38 16.0	103.57					
5	10 46 51.11	20.220	12 27 52.7	104.21					
6	10 48 52.39	20.206	12 17 25.5	104.84					
7	10 50 53.58	20.192	12 6 54.6	105.46					
8	10 52 54.69	20.178	11 56 20.0	106.07					
9	10 54 55.72	20.165	11 45 41.8	106.67					
10	10 56 56.67	20.152	11 35 0.0	107.27					
11	10 58 57.54	20.139	11 24 14.6	107.87					
12	11 0 58.34	20.128	11 13 25.6	108.45					
13	11 2 59.07	20.115	11 2 33.2	109.02					
14	11 4 59.72	20.103	10 51 37.4	109.58					
15	11 7 0.31	20.093	10 40 38.2	110.15					
16	11 9 0.83	20.082	10 29 35.6	110.70					
17	11 11 1.29	20.072	10 18 29.8	111.24					
18	11 13 1.69	20.061	10 7 20.7	111.78					
19	11 15 2.02	20.051	9 56 8.4	112.31					
20	11 17 2.30	20.043	9 44 53.0	112.83					
21	11 19 2.53	20.033	9 33 34.5	113.33					
22	11 21 2.70	20.024	9 22 13.0	113.84					
23	11 23 2.82	20.017	9 10 48.4	114.34					
24	11 25 2.90	20.009	N. 8 59 20.9	114.83					

PHASES OF THE MOON.

		^h ^m
July 5	☾ First Quarter - -	17 58.8
12	☾ Full Moon - - -	9 1.8
19	☾ Last Quarter - -	7 44.9
27	● New Moon - - -	12 0.5

		^h
July 11	☾ Perigee - - - -	14
24	☾ Apogee - - - -	4

MEAN TIME.										
LUNAR DISTANCES.										
Day.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	34 25 40	3314	35 49 35	3306	37 13 39	3300	38 37 51	3292
	Spica	E.	68 20 58	3001	66 50 47	2995	65 20 28	2989	63 50 2	2983
2	SUN	W.	45 41 14	3250	47 6 24	3240	48 31 46	3231	49 57 19	3220
	Spica	E.	56 15 57	2952	54 44 44	2946	53 13 23	2939	51 41 54	2932
	Antares	E.	102 9 46	2939	100 38 17	2930	99 6 36	2921	97 34 44	2912
3	SUN	W.	57 8 6	3168	58 34 54	3156	60 1 56	3145	61 29 11	3132
	Spica	E.	44 2 22	2901	42 30 4	2894	40 57 38	2888	39 25 4	2883
	Antares	E.	89 52 22	2862	88 19 15	2852	86 45 54	2842	85 12 20	2830
4	SUN	W.	68 49 18	3068	70 18 7	3054	71 47 13	3040	73 16 36	3026
	Saturn	W.	32 58 28	2779	34 33 24	2766	36 8 36	2752	37 44 7	2739
	Regulus	W.	23 29 9	2777	25 4 7	2760	26 39 27	2742	28 15 11	2725
	Spica	E.	31 40 51	2869	30 7 52	2869	28 34 54	2873	27 2 0	2879
	Antares	E.	77 20 47	2772	75 45 43	2760	74 10 22	2748	72 34 46	2735
	Jupiter	E.	100 44 14	2691	99 7 22	2679	97 30 14	2666	95 52 49	2653
5	SUN	W.	80 48 5	2950	82 19 20	2935	83 50 55	2919	85 22 50	2903
	Saturn	W.	45 46 20	2667	47 23 44	2652	49 1 29	2637	50 39 34	2621
	Regulus	W.	36 19 17	2645	37 57 11	2629	39 35 27	2612	41 14 5	2596
	Antares	E.	64 32 30	2670	62 55 10	2657	61 17 33	2644	59 39 38	2631
	Jupiter	E.	87 41 10	2585	86 1 54	2569	84 22 17	2555	82 42 21	2540
6	SUN	W.	93 7 39	2819	94 41 42	2802	96 16 7	2785	97 50 54	2768
	Saturn	W.	58 55 19	2543	60 35 33	2526	62 16 10	2510	63 57 9	2494
	Regulus	W.	49 32 48	2515	51 13 40	2498	52 54 56	2482	54 36 34	2465
	Antares	E.	51 25 32	2565	49 45 49	2553	48 5 49	2540	46 25 31	2528
	Jupiter	E.	74 17 25	2464	72 35 21	2448	70 52 55	2432	69 10 6	2417
	α Aquilæ	E.	98 15 17	3178	96 48 41	3157	95 21 40	3138	93 54 16	3118
7	SUN	W.	105 50 35	2681	107 27 41	2663	109 5 10	2646	110 43 3	2629
	Saturn	W.	72 27 49	2412	74 11 7	2396	75 54 48	2379	77 38 53	2363
	Regulus	W.	63 10 39	2382	64 54 39	2366	66 39 2	2349	68 23 50	2333
	Antares	E.	38 0 6	2477	36 18 21	2470	34 36 25	2464	32 54 21	2460
	Jupiter	E.	60 30 21	2336	58 45 14	2321	56 59 45	2304	55 13 52	2289
	α Aquilæ	E.	86 31 52	3039	85 2 28	3026	83 32 48	3014	82 2 53	3004
8	SUN	W.	118 58 15	2544	120 38 27	2528	122 19 1	2512	123 59 57	2496
	Saturn	W.	86 25 5	2283	88 11 29	2268	89 58 15	2253	91 45 23	2238
	Regulus	W.	77 13 39	2253	79 0 47	2239	80 48 17	2224	82 36 9	2208
	Spica	W.	24 4 55	2450	25 47 18	2410	27 30 38	2375	29 14 48	2343
	Jupiter	E.	46 18 39	2211	44 30 28	2196	42 41 54	2181	40 52 58	2167
	α Aquilæ	E.	74 30 42	2974	72 59 57	2973	71 29 11	2973	69 58 25	2977
	Fomalhaut	E.	107 14 56	2458	105 32 44	2439	103 50 5	2422	102 7 1	2403
9	Saturn	W.	100 46 26	2169	102 35 40	2157	104 25 13	2145	106 15 4	2133
	Regulus	W.	91 40 55	2139	93 30 54	2128	95 21 11	2115	97 11 47	2103
	Spica	W.	38 5 55	2222	39 53 50	2202	41 42 14	2184	43 31 5	2168
	Jupiter	E.	31 43 0	2099	29 52 0	2087	28 0 41	2075	26 9 4	2064
	α Aquilæ	E.	62 26 35	3030	60 57 0	3051	59 27 50	3075	57 59 10	3104
	Fomalhaut	E.	93 25 42	2328	91 40 23	2314	89 54 44	2302	88 8 47	2291
	α Pegasi	E.	109 20 33	2588	107 41 21	2566	106 1 40	2546	104 21 31	2527

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
			° ' "		° ' "		° ' "		° ' "	
1	SUN	W.	40 2 12	3283	41 26 43	3276	42 51 23	3267	44 16 13	3258
	Spica	E.	62 19 28	2977	60 48 47	2971	59 17 58	2965	57 47 1	2959
2	SUN	W.	51 23 4	3210	52 49 1	3201	54 15 9	3189	55 41 31	3178
	Spica	E.	50 10 16	2926	48 38 30	2920	47 6 36	2912	45 34 33	2906
	Antares	E.	96 2 41	2902	94 30 25	2893	92 57 57	2883	91 25 16	2873
3	SUN	W.	62 56 42	3120	64 24 27	3107	65 52 28	3094	67 20 45	3081
	Spica	E.	37 52 23	2879	36 19 37	2875	34 46 46	2871	33 13 50	2869
	Antares	E.	83 38 31	2818	82 4 27	2808	80 30 9	2796	78 55 36	2784
4	SUN	W.	74 46 17	3011	76 16 16	2997	77 46 33	2981	79 17 10	2966
	Saturn	W.	39 19 55	2724	40 56 3	2710	42 32 29	2696	44 9 15	2681
	Regulus	W.	29 51 17	2709	31 27 45	2693	33 4 34	2678	34 41 44	2661
	Spica	E.	25 29 14	2888	23 56 40	2903	22 24 25	2924	20 52 37	2954
	Antares	E.	70 58 53	2722	69 22 43	2709	67 46 15	2697	66 9 31	2684
	Jupiter	E.	94 15 6	2640	92 37 5	2626	90 58 45	2612	89 20 7	2599
5	SUN	W.	86 55 5	2887	88 27 41	2869	90 0 39	2853	91 33 58	2836
	Saturn	W.	52 18 1	2606	53 56 48	2590	55 35 57	2575	57 15 27	2559
	Regulus	W.	42 53 5	2580	44 32 27	2564	46 12 12	2548	47 52 18	2531
	Antares	E.	58 1 25	2618	56 22 54	2604	54 44 5	2591	53 4 57	2578
	Jupiter	E.	81 2 4	2525	79 21 26	2510	77 40 27	2495	75 59 7	2480
6	SUN	W.	99 26 4	2750	101 1 37	2733	102 37 33	2715	104 13 53	2698
	Saturn	W.	65 38 31	2477	67 20 16	2461	69 2 24	2445	70 44 55	2429
	Regulus	W.	56 18 36	2448	58 1 2	2432	59 43 51	2416	61 27 3	2399
	Antares	E.	44 44 57	2516	43 4 6	2506	41 23 1	2495	39 41 40	2485
	Jupiter	E.	67 26 55	2401	65 43 21	2385	63 59 24	2369	62 15 4	2353
	α Aquilæ	E.	92 26 28	3100	90 58 19	3083	89 29 49	3068	88 1 0	3052
7	SUN	W.	112 21 19	2612	113 59 58	2594	115 39 1	2577	117 18 27	2561
	Saturn	W.	79 23 21	2347	81 8 12	2331	82 53 27	2315	84 39 5	2300
	Regulus	W.	70 9 1	2317	71 54 35	2301	73 40 33	2285	75 26 55	2270
	Antares	E.	31 12 12	2458	29 30 0	2460	27 47 50	2465	26 5 47	2475
	Jupiter	E.	53 27 36	2272	51 40 56	2257	49 53 53	2241	48 6 27	2226
	α Aquilæ	E.	80 32 46	2995	79 2 27	2988	77 31 59	2982	76 1 24	2977
8	SUN	W.	125 41 16	2481	127 22 56	2466	129 4 57	2451	130 47 19	2436
	Saturn	W.	93 32 54	2224	95 20 46	2210	97 8 59	2196	98 57 32	2182
	Regulus	W.	84 24 24	2194	86 13 0	2180	88 1 58	2166	89 51 17	2153
	Spica	W.	30 59 45	2315	32 45 22	2288	34 31 39	2264	36 18 31	2243
	Jupiter	E.	39 3 41	2152	37 14 1	2139	35 24 1	2126	33 33 41	2112
	α Aquilæ	E.	68 27 44	2982	66 57 9	2989	65 26 43	3001	63 56 31	3014
	Fomalhaut	E.	100 23 31	2387	98 39 38	2371	96 55 21	2355	95 10 42	2341
9	Saturn	W.	108 5 13	2122	109 55 39	2111	111 46 21	2101	113 37 19	2091
	Regulus	W.	99 2 41	2092	100 53 52	2082	102 45 19	2072	104 37 2	2062
	Spica	W.	45 20 21	2152	47 10 1	2137	49 0 3	2124	50 50 26	2111
	Jupiter	E.	24 17 10	2053	22 24 59	2044	20 32 33	2034	18 39 52	2026
	α Aquilæ	E.	56 31 5	3137	55 3 40	3175	53 37 1	3220	52 11 15	3271
	Fomalhaut	E.	86 22 34	2281	84 36 6	2271	82 49 24	2262	81 2 29	2255
	α Pegasi	E.	102 40 55	2510	100 59 55	2494	99 18 33	2479	97 36 50	2465

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
10	Spica W.	52 41 8	2099	54 32 8	2088	56 23 25	2079	58 14 57	2069
	α Aquilæ E.	50 46 30	3330	49 22 53	3397	48 0 33	3472	46 39 38	3560
	Fomalhaut E.	79 15 23	2249	77 28 8	2243	75 40 44	2239	73 53 14	2236
	α Pegasi E.	95 54 48	2454	94 12 30	2444	92 29 58	2434	90 47 12	2427
11	Spica W.	67 35 44	2037	69 28 21	2033	71 21 4	2030	73 13 52	2027
	Antares W.	22 19 31	2248	24 6 47	2210	25 54 59	2180	27 43 56	2157
	Fomalhaut E.	64 55 13	2239	63 7 44	2245	61 20 24	2252	59 33 14	2261
	α Pegasi E.	82 11 26	2412	80 28 8	2414	78 44 53	2417	77 1 42	2422
12	Spica W.	82 38 19	2029	84 31 8	2032	86 23 53	2035	88 16 32	2040
	Antares W.	36 55 38	2094	38 46 47	2089	40 38 3	2086	42 29 24	2085
	Fomalhaut E.	50 41 41	2339	48 56 38	2362	47 12 8	2389	45 28 18	2419
	α Pegasi E.	68 28 28	2475	66 46 40	2492	65 5 16	2512	63 24 19	2533
	α Arietis E.	110 53 13	2159	109 3 44	2159	107 14 15	2160	105 24 47	2162
13	Antares W.	51 45 57	2098	53 36 59	2104	55 27 52	2111	57 18 35	2119
	Jupiter W.	28 57 4	2009	30 50 24	2017	32 43 32	2026	34 36 25	2037
	Fomalhaut E.	37 2 8	2651	35 24 22	2719	33 48 7	2798	32 13 36	2889
	α Pegasi E.	55 8 21	2687	53 31 23	2727	51 55 19	2773	50 20 16	2823
	α Arietis E.	96 18 38	2186	94 29 50	2194	92 41 14	2204	90 52 52	2213
14	Antares W.	66 28 38	2171	68 17 49	2184	70 6 40	2197	71 55 12	2211
	Jupiter W.	43 56 36	2096	45 47 42	2110	47 38 26	2124	49 28 49	2139
	α Pegasi E.	42 43 26	3166	41 16 36	3259	39 51 37	3363	38 28 38	3480
	α Arietis E.	81 55 12	2278	80 8 40	2293	78 22 30	2309	76 36 44	2326
15	Antares W.	80 52 26	2288	82 38 43	2305	84 24 35	2322	86 10 2	2339
	Jupiter W.	58 34 57	2218	60 22 58	2235	62 10 33	2252	63 57 44	2270
	α Aquilæ W.	43 23 12	3958	44 35 33	3868	45 49 25	3789	47 4 39	3721
	α Arietis E.	67 54 28	2424	66 11 27	2445	64 28 57	2468	62 46 59	2492
	Venus E.	97 57 53	2560	96 18 3	2579	94 38 39	2598	92 59 41	2617
	Aldebaran E.	98 26 38	2254	96 39 31	2272	94 52 50	2289	93 6 34	2306
16	Antares W.	94 50 54	2431	96 33 45	2450	98 16 9	2468	99 58 7	2487
	Jupiter W.	72 47 2	2360	74 31 34	2379	76 15 39	2397	77 59 18	2416
	α Aquilæ W.	53 35 55	3497	54 56 22	3469	56 17 21	3446	57 38 45	3427
	α Arietis E.	54 25 45	2623	52 47 21	2652	51 9 37	2683	49 32 34	2714
	Aldebaran E.	84 21 44	2398	82 38 6	2416	80 54 54	2435	79 12 9	2453
	Venus E.	84 51 27	2716	83 15 8	2737	81 39 17	2756	80 3 52	2777
	Sun E.	130 26 20	2703	128 49 44	2722	127 13 34	2743	125 37 51	2763
17	Jupiter W.	86 30 55	2509	88 11 56	2527	89 52 32	2545	91 32 42	2564
	α Aquilæ W.	64 30 2	3376	65 52 46	3372	67 15 34	3372	68 38 23	3372
	Fomalhaut W.	28 55 27	3483	30 16 10	3412	31 38 13	3353	33 1 23	3305
	α Arietis E.	41 38 33	2901	40 6 15	2944	38 34 52	2991	37 4 28	3043
	Aldebaran E.	70 44 58	2547	69 4 50	2566	67 25 8	2585	65 45 52	2602
	Venus E.	72 13 29	2880	70 40 44	2899	69 8 24	2920	67 36 30	2939
	Sun E.	117 45 53	2864	116 12 48	2883	114 40 7	2904	113 7 53	2923
18	Jupiter W.	99 47 24	2652	101 25 9	2668	103 2 32	2685	104 39 32	2701
	α Aquilæ W.	75 31 49	3394	76 54 12	3401	78 16 27	3410	79 38 32	3420
	Fomalhaut W.	40 8 12	3171	41 34 56	3158	43 1 56	3148	44 29 7	3140

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LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
10	Spica W.	60° 6' 44"	2061	61° 58' 43"	2054	63° 50' 53"	2047	65° 43' 14"	2041
	α Aquilæ E.	45 20 20	3660	44 2 50	3772	42 47 19	3901	41 34 0	4049
	Fomalhaut E.	72 5 40	2233	70 18 2	2233	68 30 24	2234	66 42 47	2236
	α Pegasi E.	89 4 16	2421	87 21 11	2417	85 38 0	2413	83 54 44	2412
11	Spica W.	75 6 44	2026	76 59 37	2025	78 52 32	2026	80 45 26	2026
	Antares W.	29 33 29	2137	31 23 31	2122	33 13 56	2110	35 4 40	2101
	Fomalhaut E.	57 46 17	2272	55 59 36	2285	54 13 14	2300	52 27 15	2317
	α Pegasi E.	75 18 38	2429	73 35 45	2437	71 53 3	2448	70 10 37	2460
12	Spica W.	90 9 4	2046	92 1 27	2051	93 53 42	2058	95 45 46	2064
	Antares W.	44 20 47	2085	46 12 10	2086	48 3 30	2088	49 54 47	2093
	Fomalhaut E.	43 45 11	2454	42 2 53	2494	40 21 32	2540	38 41 14	2592
	α Pegasi E.	61 43 52	2558	60 3 59	2585	58 24 44	2615	56 46 10	2649
	α Arietis E.	103 35 22	2164	101 46 0	2168	99 56 44	2173	98 7 36	2180
13	Antares W.	59 9 5	2128	60 59 21	2137	62 49 23	2148	64 39 9	2159
	Jupiter W.	36 29 2	2047	38 21 23	2059	40 13 26	2070	42 5 11	2083
	Fomalhaut E.	30 41 3	2996	29 10 45	3121	27 43 1	3270	26 18 14	3448
	α Pegasi E.	48 46 18	2878	47 13 31	2939	45 42 2	3007	44 11 58	3082
	α Arietis E.	89 4 44	2225	87 16 53	2237	85 29 20	2249	83 42 6	2263
14	Antares W.	73 43 23	2225	75 31 13	2241	77 18 40	2256	79 5 45	2272
	Jupiter W.	51 18 49	2153	53 8 27	2169	54 57 41	2185	56 46 31	2201
	α Pegasi E.	37 7 52	3611	35 49 30	3761	34 33 47	3928	33 20 56	4122
	α Arietis E.	74 51 23	2344	73 6 28	2362	71 21 59	2382	69 37 59	2403
15	Antares W.	87 55 5	2357	89 39 41	2375	91 23 52	2394	93 7 36	2412
	Jupiter W.	65 44 28	2287	67 30 46	2305	69 16 38	2324	71 2 3	2342
	α Aquilæ W.	48 21 4	3663	49 38 31	3611	50 56 53	3567	52 16 3	3529
	α Arietis E.	61 5 34	2516	59 24 43	2541	57 44 27	2568	56 4 48	2594
	Venus E.	91 21 9	2637	89 43 4	2656	88 5 25	2675	86 28 12	2696
	Aldebaran E.	91 20 43	2324	89 35 19	2342	87 50 21	2360	86 5 49	2379
16	Antares W.	101 39 38	2507	103 20 42	2526	105 1 19	2545	106 41 29	2564
	Jupiter W.	79 42 30	2434	81 25 16	2453	83 7 35	2472	84 49 28	2490
	α Aquilæ W.	59 0 31	3411	60 22 35	3398	61 44 54	3388	63 7 24	3381
	α Arietis E.	47 56 13	2748	46 20 37	2783	44 45 47	2820	43 11 45	2859
	Aldebaran E.	77 29 50	2472	75 47 58	2491	74 6 32	2510	72 25 32	2528
	Venus E.	78 28 54	2798	76 54 23	2818	75 20 19	2838	73 46 41	2859
	Sun E.	124 2 35	2783	122 27 45	2804	120 53 22	2823	119 19 24	2844
17	Jupiter W.	93 12 27	2582	94 51 47	2599	96 30 44	2617	98 9 16	2635
	α Aquilæ W.	70 1 12	3374	71 23 58	3377	72 46 41	3382	74 9 18	3387
	Fomalhaut W.	34 25 29	3266	35 50 20	3234	37 15 49	3209	38 41 48	3188
	α Arietis E.	35 35 8	3098	34 6 56	3158	32 39 57	3225	31 14 17	3299
	Aldebaran E.	64 7 0	2621	62 28 33	2639	60 50 31	2656	59 12 52	2674
	Venus E.	66 5 1	2959	64 33 57	2979	63 3 18	2998	61 33 3	3018
	Sun E.	111 36 3	2942	110 4 37	2962	108 33 36	2981	107 2 59	3000
18	Jupiter W.	106 16 10	2717	107 52 27	2732	109 28 24	2748	111 3 59	2763
	α Aquilæ W.	81 0 26	3430	82 22 9	3440	83 43 40	3452	85 4 58	3463
	Fomalhaut W.	45 56 28	3135	47 23 55	3132	48 51 26	3130	50 18 59	3130

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Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
18	Aldebaran E.	57 35 37	2692	55 58 46	2709	54 22 18	2725	52 46 12	2742
	Venus E.	60 3 12	3036	58 33 44	3055	57 4 39	3073	55 35 57	3091
	SUN E.	105 32 46	3018	104 2 55	3037	102 33 28	3054	101 4 22	3072
19	α Aquilæ W.	86 26 3	3476	87 46 54	3489	89 7 30	3502	90 27 52	3516
	Fomalhaut W.	51 46 32	3130	53 14 5	3132	54 41 36	3134	56 9 4	3138
	α Pegasi W.	39 21 43	3966	40 33 56	3910	41 47 6	3859	43 1 8	3814
	Aldebaran E.	44 51 4	2821	43 17 4	2836	41 43 23	2851	40 10 1	2865
	Venus E.	48 17 46	3177	46 51 9	3193	45 24 51	3208	43 58 51	3223
	SUN E.	93 44 11	3155	92 17 8	3172	90 50 25	3187	89 24 0	3201
20	α Aquilæ W.	97 5 39	3593	98 24 21	3610	99 42 45	3626	101 0 51	3645
	Fomalhaut W.	63 25 15	3159	64 52 13	3165	66 19 4	3170	67 45 49	3176
	α Pegasi W.	49 21 9	3661	50 38 38	3639	51 56 30	3621	53 14 42	3605
	Aldebaran E.	32 27 37	2932	30 55 59	2945	29 24 37	2958	27 53 31	2969
	Venus E.	36 53 11	3292	35 28 50	3305	34 4 44	3318	32 40 53	3329
	SUN E.	82 16 7	3269	80 51 19	3282	79 26 46	3293	78 2 26	3305
21	α Aquilæ W.	107 26 24	3740	108 42 29	3762	109 58 11	3785	111 13 29	3807
	Fomalhaut W.	74 57 53	3203	76 23 59	3209	77 49 58	3214	79 15 51	3219
	α Pegasi W.	59 49 27	3547	61 8 59	3540	62 28 39	3532	63 48 28	3526
	SUN E.	71 3 56	3354	69 40 47	3364	68 17 49	3372	66 55 0	3379
22	Fomalhaut W.	86 23 51	3242	87 49 11	3246	89 14 26	3250	90 39 36	3253
	α Pegasi W.	70 28 59	3503	71 49 20	3501	73 9 43	3497	74 30 10	3495
	α Arietis W.	27 12 4	3817	28 26 49	3750	29 42 43	3693	30 59 37	3645
	SUN E.	60 2 57	3411	58 40 53	3417	57 18 56	3421	55 57 3	3425
23	Fomalhaut W.	97 44 21	3272	99 9 5	3275	100 33 46	3278	101 58 23	3282
	α Pegasi W.	81 13 1	3487	82 33 40	3484	83 54 22	3484	85 15 4	3483
	α Arietis W.	37 35 21	3476	38 56 12	3453	40 17 29	3431	41 39 10	3412
	SUN E.	49 8 44	3441	47 47 14	3443	46 25 46	3445	45 4 20	3446
24	α Pegasi W.	91 58 46	3481	93 19 31	3481	94 40 16	3482	96 1 0	3482
	α Arietis W.	48 32 30	3338	49 55 58	3325	51 19 41	3313	52 43 37	3303
	SUN E.	38 17 25	3447	36 56 2	3446	35 34 38	3446	34 13 14	3446
25	α Pegasi W.	102 44 24	3489	104 5 0	3493	105 25 32	3496	106 46 1	3499
	α Arietis W.	59 46 14	3255	61 11 18	3247	62 36 32	3238	64 1 56	3231
	SUN E.	27 25 52	3438	26 4 18	3436	24 42 42	3434	23 21 4	3431
29	SUN W.	17 12 27	3263	18 37 21	3251	20 2 30	3240	21 27 52	3230
	Spica E.	59 10 4	2932	57 38 26	2926	56 6 40	2920	54 34 47	2915
	Antares E.	105 4 19	2924	103 32 31	2916	102 0 32	2908	100 28 23	2900
30	SUN W.	28 37 47	3178	30 4 22	3169	31 31 8	3159	32 58 6	3149
	Spica E.	46 53 39	2889	45 21 6	2884	43 48 27	2880	42 15 43	2877
	Antares E.	92 45 5	2859	91 11 54	2851	89 38 32	2843	88 5 0	2834
31	SUN W.	40 15 56	3100	41 44 6	3090	43 12 28	3079	44 41 3	3069
	Spica E.	34 31 5	2866	32 58 3	2868	31 25 3	2871	29 52 7	2875
	Antares E.	80 14 34	2792	78 39 55	2783	77 5 5	2775	75 30 4	2766
	Jupiter E.	100 53 47	2730	99 17 47	2721	97 41 35	2711	96 5 10	2703

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
18	Aldebaran E.	51 10 28	2758	49 35 5	2775	48 0 4	2791	46 25 24	2806
	Venus E.	54 7 37	3109	52 39 38	3126	51 12 0	3143	49 44 43	3161
	Sun E.	99 35 38	3090	98 7 16	3106	96 39 14	3123	95 11 32	3140
19	α Aquilæ W.	91 47 58	3531	93 7 48	3545	94 27 22	3561	95 46 39	3576
	Fomalhaut W.	57 36 28	3141	59 3 48	3146	60 31 2	3150	61 58 11	3154
	α Pegasi W.	44 15 56	3775	45 31 24	3741	46 47 28	3710	48 4 4	3683
	Aldebaran E.	38 36 57	2879	37 4 11	2893	35 31 43	2905	33 59 31	2919
	Venus E.	42 33 9	3238	41 7 45	3252	39 42 37	3266	38 17 46	3280
	Sun E.	87 57 52	3215	86 32 1	3230	85 6 27	3243	83 41 9	3257
20	α Aquilæ W.	102 18 37	3662	103 36 5	3681	104 53 12	3700	106 9 59	3719
	Fomalhaut W.	69 12 27	3182	70 38 58	3187	72 5 23	3193	73 31 41	3198
	α Pegasi W.	54 33 11	3591	55 51 55	3577	57 10 54	3566	58 30 5	3556
	Aldebaran E.	26 22 40	2982	24 52 5	2994	23 21 45	3006	21 51 40	3020
	Venus E.	31 17 15	3340	29 53 50	3351	28 30 37	3362	27 7 37	3373
	Sun E.	76 38 20	3315	75 14 26	3326	73 50 45	3336	72 27 15	3345
21	α Aquilæ W.	112 28 24	3830	113 42 55	3856	114 56 59	3883	116 10 36	3910
	Fomalhaut W.	80 41 38	3223	82 7 20	3228	83 32 56	3233	84 58 26	3237
	α Pegasi W.	65 8 23	3521	66 28 24	3515	67 48 31	3511	69 8 43	3507
	Sun E.	65 32 20	3386	64 9 48	3393	62 47 24	3400	61 25 7	3406
22	Fomalhaut W.	92 4 42	3258	93 29 43	3261	94 54 40	3265	96 19 32	3268
	α Pegasi W.	75 50 40	3493	77 11 12	3491	78 31 46	3488	79 52 23	3488
	α Arietis W.	32 17 23	3601	33 35 56	3565	34 55 9	3531	36 14 59	3502
	Sun E.	54 35 15	3430	53 13 32	3433	51 51 53	3436	50 30 17	3438
23	Fomalhaut W.	103 22 56	3284	104 47 26	3288	106 11 52	3290	107 36 15	3293
	α Pegasi W.	86 35 47	3482	87 56 31	3481	89 17 16	3481	90 38 1	3481
	α Arietis W.	43 1 13	3394	44 23 36	3379	45 46 17	3363	47 9 16	3350
	Sun E.	43 42 56	3446	42 21 32	3447	41 0 9	3448	39 38 47	3448
24	α Pegasi W.	97 21 44	3484	98 42 26	3485	100 3 7	3486	101 23 47	3488
	α Arietis W.	54 7 45	3292	55 32 6	3282	56 56 38	3273	58 21 21	3265
	Sun E.	32 51 49	3444	31 30 22	3443	30 8 54	3441	28 47 24	3439
25	α Pegasi W.	108 6 26	3504	109 26 46	3507	110 47 2	3513	112 7 12	3519
	α Arietis W.	65 27 29	3223	66 53 11	3215	68 19 3	3208	69 45 3	3199
	Sun E.	21 59 23	3431	20 37 42	3429	19 15 58	3429	17 54 14	3429
29	Sun W.	22 53 26	3219	24 19 13	3208	25 45 13	3198	27 11 24	3188
	Spica E.	53 2 47	2909	51 30 40	2904	49 58 26	2899	48 26 6	2894
	Antares E.	98 56 4	2892	97 23 35	2883	95 50 55	2876	94 18 5	2868
30	Sun W.	34 25 16	3139	35 52 38	3129	37 20 12	3119	38 47 58	3110
	Spica E.	40 42 55	2873	39 10 2	2870	37 37 5	2869	36 4 6	2867
	Antares E.	86 31 16	2826	84 57 22	2818	83 23 17	2809	81 49 1	2801
31	Sun W.	46 9 51	3059	47 38 51	3048	49 8 4	3038	50 37 30	3026
	Spica E.	28 19 16	2882	26 46 34	2892	25 14 5	2905	23 41 53	2921
	Antares E.	73 54 51	2757	72 19 27	2748	70 43 51	2739	69 8 3	2731
	Jupiter E.	94 28 34	2693	92 51 45	2684	91 14 44	2674	89 37 29	2665

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to subtr. from Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
Thur.	1	^h 8 ^m 47 ^s 13'40	9'701	N. 17 55 14'5	38'10	^m 6'60	6 4'08	0'155
Frid.	2	8 51 5'92	9'675	17 39 51'5	38'82	6 5'51	6 0'05	0'181
Sat.	3	8 54 57'81	9'649	17 24 11'2	39'53	6 6'43	5 55'41	0'206
Sun.	4	8 58 49'08	9'624	17 8 13'9	40'23	6 6'34	5 50'14	0'232
Mon.	5	9 2 39'74	9'598	16 52 0'1	40'91	6 6'25	5 44'25	0'258
Tues.	6	9 6 29'78	9'572	16 35 30'0	41'59	6 6'16	5 37'75	0'284
Wed.	7	9 10 19'20	9'547	16 18 43'8	42'25	6 6'08	5 30'64	0'309
Thur.	8	9 14 8'03	9'522	16 1 42'0	42'90	5 5'99	5 22'93	0'334
Frid.	9	9 17 56'26	9'497	15 44 24'8	43'53	5 5'91	5 14'63	0'358
Sat.	10	9 21 43'90	9'473	15 26 52'6	44'15	5 5'83	5 5'74	0'382
Sun.	11	9 25 30'97	9'449	15 9 5'5	44'76	5 5'75	4 56'28	0'406
Mon.	12	9 29 17'47	9'426	14 51 4'0	45'36	5 5'67	4 46'25	0'429
Tues.	13	9 33 3'42	9'404	14 32 48'2	45'95	5 5'59	4 35'68	0'452
Wed.	14	9 36 48'84	9'381	14 14 18'5	46'52	5 5'51	4 24'57	0'474
Thur.	15	9 40 33'73	9'360	13 55 35'2	47'08	5 5'43	4 12'95	0'495
Frid.	16	9 44 18'12	9'339	13 36 38'5	47'63	5 5'35	4 0'82	0'516
Sat.	17	9 48 2'02	9'319	13 17 28'8	48'17	5 5'28	3 48'19	0'536
Sun.	18	9 51 45'42	9'299	12 58 6'4	48'69	5 5'21	3 35'07	0'556
Mon.	19	9 55 28'35	9'279	12 38 31'5	49'21	5 5'14	3 21'49	0'576
Tues.	20	9 59 10'82	9'260	12 18 44'5	49'70	5 5'07	3 7'44	0'595
Wed.	21	10 2 52'84	9'241	11 58 45'7	50'19	5 5'00	2 52'94	0'613
Thur.	22	10 6 34'41	9'223	11 38 35'5	50'66	4 4'93	2 38'00	0'632
Frid.	23	10 10 15'54	9'205	11 18 14'1	51'12	4 4'87	2 22'62	0'649
Sat.	24	10 13 56'26	9'188	10 57 41'9	51'56	4 4'80	2 6'83	0'667
Sun.	25	10 17 36'56	9'171	10 36 59'3	51'99	4 4'74	1 50'62	0'684
Mon.	26	10 21 16'46	9'155	10 16 6'5	52'40	4 4'68	1 34'02	0'700
Tues.	27	10 24 55'98	9'139	9 55 3'9	52'81	4 4'62	1 17'02	0'716
Wed.	28	10 28 35'11	9'123	9 33 51'8	53'20	4 4'57	0 59'65	0'731
Thur.	29	10 32 13'88	9'108	9 12 30'5	53'57	4 4'52	0 41'92	0'746
Frid.	30	10 35 52'30	9'094	8 51 0'5	53'93	4 4'48	0 23'84	0'760
Sat.	31	10 39 30'39	9'080	8 29 22'0	54'28	4 4'43	0 5'42	0'774
Sun.	32	10 43 8'15	9'067	N. 8 7 35'3	54'61	4 4'38	0 13'32	0'787

* Mean Time of the Semidiameter passing may be found by subtracting 0'.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be subt. from added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
Thur.	1	^h 8 ^m 47 ^s 12.42	N. 17° 55' 18".4	15 47.9	^m 6 ^s 4.10	^h 8 ^m 41 ^s 8.32
Frid.	2	8 51 4.95	17 39 55.3	15 48.0	6 0.07	8 45 4.88
Sat.	3	8 54 56.86	17 24 15.0	15 48.2	5 55.43	8 49 1.43
Sun.	4	8 58 48.15	17 8 17.8	15 48.3	5 50.16	8 52 57.99
Mon.	5	9 2 38.82	16 52 4.0	15 48.5	5 44.27	8 56 54.54
Tues.	6	9 6 28.88	16 35 33.9	15 48.6	5 37.78	9 0 51.10
Wed.	7	9 10 18.33	16 18 47.7	15 48.8	5 30.67	9 4 47.65
Thur.	8	9 14 7.17	16 1 45.9	15 48.9	5 22.96	9 8 44.21
Frid.	9	9 17 55.43	15 44 28.6	15 49.1	5 14.66	9 12 40.77
Sat.	10	9 21 43.09	15 26 56.3	15 49.2	5 5.77	9 16 37.32
Sun.	11	9 25 30.19	15 9 9.2	15 49.4	4 56.31	9 20 33.88
Mon.	12	9 29 16.72	14 51 7.6	15 49.6	4 46.29	9 24 30.43
Tues.	13	9 33 2.70	14 32 51.7	15 49.7	4 35.72	9 28 26.98
Wed.	14	9 36 48.15	14 14 21.9	15 49.9	4 24.61	9 32 23.54
Thur.	15	9 40 33.08	13 55 38.5	15 50.1	4 12.98	9 36 20.09
Frid.	16	9 44 17.50	13 36 41.7	15 50.3	4 0.85	9 40 16.65
Sat.	17	9 48 1.43	13 17 31.8	15 50.4	3 48.23	9 44 13.20
Sun.	18	9 51 44.87	12 58 9.3	15 50.6	3 35.11	9 48 9.76
Mon.	19	9 55 27.84	12 38 34.3	15 50.8	3 21.52	9 52 6.31
Tues.	20	9 59 10.34	12 18 47.1	15 51.0	3 7.47	9 56 2.87
Wed.	21	10 2 52.39	11 58 48.1	15 51.2	2 52.97	9 59 59.42
Thur.	22	10 6 34.00	11 38 37.7	15 51.4	2 38.03	10 3 55.97
Frid.	23	10 10 15.18	11 18 16.2	15 51.6	2 22.65	10 7 52.53
Sat.	24	10 13 55.93	10 57 43.8	15 51.8	2 6.85	10 11 49.08
Sun.	25	10 17 36.28	10 37 0.9	15 52.0	1 50.64	10 15 45.64
Mon.	26	10 21 16.23	10 16 7.9	15 52.2	1 34.04	10 19 42.19
Tues.	27	10 24 55.78	9 55 5.0	15 52.4	1 17.04	10 23 38.74
Wed.	28	10 28 34.96	9 33 52.7	15 52.7	0 59.67	10 27 35.30
Thur.	29	10 32 13.78	9 12 31.2	15 52.9	0 41.93	10 31 31.85
Frid.	30	10 35 52.24	8 51 0.8	15 53.1	0 23.84	10 35 28.40
Sat.	31	10 39 30.37	8 29 22.0	15 53.4	0 5.42	10 39 24.96
Sun.	32	10 43 8.18	N. 8 7 35.1	15 53.6	0 13.33	10 43 21.51

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	129° 21' 41".7	N. 0° 32'	0.0063385	15 ^h 16 ^m 21 ^s .15	15' 26".6	15' 31".4	56' 34".7	56' 52".2
2	130° 19' 8".7	0° 33'	0.0062765	15 12 25.24	15 36.3	15 41.4	57 10.4	57 29.2
3	131° 16' 36".4	0° 30'	0.0062123	15 8 29.33	15 46.7	15 52.1	57 48.6	58 8.4
4	132° 14' 4".8	0° 24'	0.0061462	15 4 33.42	15 57.6	16 3.0	58 28.3	58 48.1
5	133° 11' 33".9	0° 16'	0.0060784	15 0 37.51	16 8.3	16 13.3	59 7.4	59 26.0
6	134° 9' 3".9	N. 0° 05'	0.0060089	14 56 41.60	16 18.0	16 22.3	59 43.3	59 58.8
7	135° 6' 34".6	S. 0° 08'	0.0059379	14 52 45.69	16 25.9	16 28.9	60 12.2	60 22.9
8	136° 4' 6".3	0° 22'	0.0058658	14 48 49.78	16 31.0	16 32.1	60 30.6	60 34.8
9	137° 1' 38".8	0° 36'	0.0057925	14 44 53.87	16 32.2	16 31.3	60 35.2	60 31.8
10	137° 59' 12".3	0° 50'	0.0057181	14 40 57.96	16 29.3	16 26.2	60 24.5	60 13.3
11	138° 56' 46".9	0° 61'	0.0056427	14 37 2.05	16 22.2	16 17.3	59 58.5	59 40.5
12	139° 54' 22".6	0° 70'	0.0055663	14 33 6.14	16 11.6	16 5.3	59 19.7	58 56.7
13	140° 51' 59".7	0° 76'	0.0054889	14 29 10.23	15 58.6	15 51.5	58 31.9	58 6.1
14	141° 49' 38".1	0° 79'	0.0054105	14 25 14.33	15 44.3	15 37.2	57 39.8	57 13.5
15	142° 47' 18".1	0° 78'	0.0053310	14 21 18.42	15 30.2	15 23.4	56 47.8	56 23.1
16	143° 44' 59".7	0° 75'	0.0052501	14 17 22.51	15 17.1	15 11.2	55 59.8	55 38.3
17	144° 42' 42".9	0° 69'	0.0051679	14 13 26.60	15 5.9	15 1.2	55 18.8	55 1.6
18	145° 40' 27".7	0° 61'	0.0050844	14 9 30.69	14 57.1	14 53.7	54 46.6	54 34.2
19	146° 38' 14".3	0° 51'	0.0049994	14 5 34.78	14 51.0	14 49.0	54 24.3	54 16.9
20	147° 36' 2".5	0° 41'	0.0049128	14 1 38.87	14 47.6	14 46.9	54 12.0	54 9.5
21	148° 33' 52".4	0° 30'	0.0048245	13 57 42.97	14 46.9	14 47.5	54 9.4	54 11.5
22	149° 31' 44".0	0° 18'	0.0047344	13 53 47.06	14 48.6	14 50.3	54 15.7	54 21.8
23	150° 29' 37".3	S. 0° 07'	0.0046426	13 49 51.15	14 52.4	14 55.0	54 29.6	54 38.9
24	151° 27' 32".2	N. 0° 04'	0.0045490	13 45 55.24	14 57.9	15 1.2	54 49.7	55 1.6
25	152° 25' 28".7	0° 14'	0.0044535	13 41 59.33	15 4.7	15 8.4	55 14.4	55 28.0
26	153° 23' 26".8	0° 22'	0.0043562	13 38 3.43	15 12.2	15 16.2	55 42.2	55 56.8
27	154° 21' 26".4	0° 28'	0.0042570	13 34 7.52	15 20.3	15 24.4	56 11.6	56 26.6
28	155° 19' 27".5	0° 32'	0.0041559	13 30 11.61	15 28.5	15 32.5	56 41.6	56 56.5
29	156° 17' 30".2	0° 33'	0.0040530	13 26 15.70	15 36.5	15 40.5	57 11.2	57 25.8
30	157° 15' 34".3	0° 30'	0.0039485	13 22 19.80	15 44.4	15 48.3	57 40.1	57 54.2
31	158° 13' 39".8	0° 25'	0.0038423	13 18 23.89	15 52.0	15 55.6	58 7.9	58 21.2
32	159° 11' 46".9	N. 0° 17'	0.0037347	13 14 27.98	15 59.2	16 2.5	58 34.1	58 46.5

MEAN TIME.

THE MOON'S

Day of the Month.

	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	181° 18' 20.6"	187° 49' 54.8"	N. 5° 8' 13.3"	N. 5° 12' 41.1"	4.5	3 38.5	16 1.3
2	194 25 19.3	201 4 42.2	5 13 5.3	5 9 18.2	5.5	4 24.3	16 47.6
3	207 48 10.8	214 35 51.9	5 1 15.2	4 48 55.2	6.5	5 11.5	17 36.0
4	221 27 50.1	228 24 8.0	4 32 20.5	4 11 37.2	7.5	6 1.2	18 27.2
5	235 24 44.9	242 29 36.4	3 46 56.3	3 18 33.2	8.5	6 54.2	19 22.2
6	249 38 32.9	256 51 19.8	2 46 48.7	2 12 8.8	9.5	7 51.1	20 21.0
7	264 7 35.9	271 26 53.3	1 35 4.8	N. 0 56 13.0	10.5	8 51.7	21 22.9
8	278 48 37.2	286 12 6.1	N. 0 16 13.3	S. 0 24 10.4	11.5	9 54.5	22 26.1
9	293 36 33.0	301 1 5.6	S. 1 4 12.9	1 43 8.3	12.5	10 57.3	23 28.0
10	308 24 48.6	315 46 45.3	2 20 12.8	2 54 45.5	13.5	11 57.9	* *
11	323 5 59.3	330 21 37.9	3 26 10.0	3 53 56.4	14.5	12 54.9	0 26.9
12	337 32 52.3	344 39 0.6	4 17 41.1	4 37 7.6	15.5	13 47.9	1 21.9
13	351 39 29.3	358 33 53.1	4 52 6.7	5 2 35.3	16.5	14 37.5	2 13.1
14	5 21 56.7	12 3 33.4	5 8 35.8	5 10 15.7	17.5	15 24.4	3 1.2
15	18 38 45.5	25 7 43.5	5 7 46.1	5 1 20.5	18.5	16 9.7	3 47.2
16	31 30 44.6	37 48 12.9	4 51 14.6	4 37 44.8	19.5	16 54.4	4 32.1
17	44 0 36.6	50 8 28.2	4 21 8.8	4 1 43.8	20.5	17 39.3	5 16.8
18	56 12 23.1	62 12 58.9	3 39 47.3	3 15 36.3	21.5	18 25.0	6 2.0
19	68 10 53.9	74 6 47.5	2 49 27.8	2 21 38.3	22.5	19 11.9	6 48.3
20	80 1 18.2	85 55 4.7	1 52 24.8	1 22 3.6	23.5	20 0.0	7 35.8
21	91 48 43.4	97 42 49.8	S. 0 50 51.4	S. 0 19 5.8	24.5	20 49.0	8 24.4
22	103 37 56.7	109 34 34.7	N. 0 12 55.9	N. 0 44 55.0	25.5	21 38.5	9 13.8
23	115 33 11.8	121 34 12.2	1 16 33.0	1 47 29.8	26.5	22 27.8	10 3.2
24	127 37 57.3	133 44 44.5	2 17 25.2	2 45 58.1	27.5	23 16.4	10 52.2
25	139 54 47.9	146 8 17.6	3 12 47.7	3 37 32.0	28.5	* *	11 40.3
26	152 25 20.2	158 45 58.7	3 59 50.4	4 19 22.5	29.5	0 3.9	12 27.3
27	165 10 12.8	171 37 59.6	4 35 48.9	4 48 52.2	0.9	0 50.5	13 13.6
28	178 9 13.7	184 43 48.1	4 58 16.6	5 3 49.4	1.9	1 36.5	13 59.5
29	191 21 34.2	198 2 23.4	5 5 20.6	5 2 43.0	2.9	2 22.6	14 45.9
30	204 46 7.1	211 32 36.7	4 55 53.7	4 44 53.3	3.9	3 9.6	15 33.7
31	218 21 45.2	225 13 26.1	4 29 46.2	4 10 40.8	4.9	3 58.3	16 23.6
32	232 7 34.7	239 4 6.2	N. 3 47 49.6	N. 3 21 28.8	5.9	4 49.7	17 16.6

The Moon's Longitude and Latitude are from HANSEN's Tables *direct*; the Right Ascension and Declination contain NEWCOMB's corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 1.					SATURDAY 3.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	12 12 57.82	19.969	N. 4 11 39.5	124.11	0	13 50 28.19	20.906	S. 6 0 16.4	127.13
1	12 14 57.65	19.973	3 59 14.0	124.39	1	13 52 33.73	20.942	6 12 58.6	126.93
2	12 16 57.50	19.978	3 46 46.8	124.68	2	13 54 39.49	20.978	6 25 39.6	126.73
3	12 18 57.39	19.985	3 34 17.9	124.94	3	13 56 45.46	21.014	6 38 19.4	126.53
4	12 20 57.32	19.992	3 21 47.5	125.19	4	13 58 51.66	21.053	6 50 57.9	126.31
5	12 22 57.29	19.999	3 9 15.6	125.43	5	14 0 58.09	21.091	7 3 35.1	126.08
6	12 24 57.31	20.007	2 56 42.3	125.68	6	14 3 47.75	21.129	7 16 10.8	125.83
7	12 26 57.37	20.015	2 44 7.5	125.91	7	14 5 11.64	21.168	7 28 45.1	125.58
8	12 28 57.49	20.024	2 31 31.4	126.13	8	14 7 18.77	21.208	7 41 17.7	125.30
9	12 30 57.66	20.033	2 18 54.0	126.33	9	14 9 26.14	21.249	7 53 48.7	125.03
10	12 32 57.89	20.044	2 6 15.4	126.54	10	14 11 33.76	21.291	8 6 18.0	124.73
11	12 34 58.19	20.055	1 53 35.5	126.73	11	14 13 41.63	21.333	8 18 45.5	124.43
12	12 36 58.55	20.066	1 40 54.6	126.91	12	14 15 49.75	21.375	8 31 11.1	124.11
13	12 38 58.98	20.078	1 28 12.6	127.09	13	14 17 58.13	21.419	8 43 34.8	123.78
14	12 40 59.49	20.091	1 15 29.5	127.26	14	14 20 6.78	21.463	8 55 56.5	123.44
15	12 43 0.07	20.104	1 2 45.5	127.42	15	14 22 15.69	21.508	9 8 16.1	123.09
16	12 45 0.74	20.118	0 50 0.5	127.57	16	14 24 24.87	21.553	9 20 33.6	122.73
17	12 47 1.49	20.133	0 37 14.7	127.71	17	14 26 34.32	21.598	9 32 48.8	122.34
18	12 49 2.33	20.148	0 24 28.0	127.83	18	14 28 44.05	21.646	9 45 1.7	121.95
19	12 51 3.26	20.163	N. 0 11 40.7	127.95	19	14 30 54.07	21.693	9 57 12.2	121.55
20	12 53 4.29	20.180	S. 0 1 7.4	128.07	20	14 33 4.36	21.739	10 9 20.3	121.14
21	12 55 5.42	20.198	0 13 56.1	128.17	21	14 35 14.94	21.788	10 21 25.9	120.71
22	12 57 6.66	20.215	0 26 45.4	128.26	22	14 37 25.82	21.837	10 33 28.8	120.26
23	12 59 8.00	20.233	S. 0 39 35.2	128.34	23	14 39 36.98	21.885	S. 10 45 29.0	119.81
FRIDAY 2.					SUNDAY 4.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	13 1 9.45	20.252	S. 0 52 25.5	128.42	0	14 41 48.44	21.936	S. 10 57 26.5	119.34
1	13 3 11.02	20.272	1 5 16.2	128.48	1	14 44 0.21	21.987	11 9 21.1	118.86
2	13 5 12.71	20.292	1 18 7.2	128.53	2	14 46 12.28	22.037	11 21 12.8	118.37
3	13 7 14.52	20.313	1 30 58.5	128.58	3	14 48 24.65	22.088	11 33 1.5	117.86
4	13 9 16.46	20.334	1 43 50.1	128.61	4	14 50 37.34	22.141	11 44 47.1	117.33
5	13 11 18.53	20.357	1 56 41.8	128.63	5	14 52 50.34	22.193	11 56 29.5	116.80
6	13 13 20.74	20.380	2 9 33.7	128.65	6	14 55 3.66	22.247	12 8 8.7	116.25
7	13 15 23.09	20.403	2 22 25.6	128.65	7	14 57 17.30	22.301	12 19 44.5	115.68
8	13 17 25.58	20.428	2 35 17.5	128.65	8	14 59 31.27	22.355	12 31 16.9	115.11
9	13 19 28.22	20.453	2 48 9.4	128.63	9	15 1 45.56	22.408	12 42 45.8	114.52
10	13 21 31.01	20.478	3 1 1.1	128.60	10	15 4 0.17	22.463	12 54 11.1	113.92
11	13 23 33.95	20.504	3 13 52.6	128.56	11	15 6 15.12	22.519	13 5 32.8	113.30
12	13 25 37.06	20.532	3 26 43.8	128.51	12	15 8 30.40	22.575	13 16 50.7	112.66
13	13 27 40.33	20.558	3 39 34.7	128.46	13	15 10 46.02	22.632	13 28 4.7	112.02
14	13 29 43.76	20.587	3 52 25.3	128.40	14	15 13 1.98	22.688	13 39 14.9	111.36
15	13 31 47.37	20.616	4 5 15.5	128.32	15	15 15 18.28	22.746	13 50 21.0	110.68
16	13 33 51.15	20.645	4 18 5.1	128.23	16	15 17 34.93	22.803	14 1 23.0	109.98
17	13 35 55.11	20.675	4 30 54.2	128.13	17	15 19 51.92	22.862	14 12 20.8	109.28
18	13 37 59.25	20.707	4 43 42.6	128.02	18	15 22 9.27	22.920	14 23 14.4	108.57
19	13 40 3.59	20.738	4 56 30.4	127.90	19	15 24 26.96	22.978	14 34 3.6	107.83
20	13 42 8.11	20.770	5 9 17.4	127.76	20	15 26 45.01	23.038	14 44 48.3	107.08
21	13 44 12.83	20.803	5 22 3.5	127.62	21	15 29 3.41	23.097	14 55 28.5	106.32
22	13 46 17.74	20.836	5 34 48.8	127.47	22	15 31 22.17	23.157	15 6 4.1	105.54
23	13 48 22.86	20.871	5 47 33.1	127.30	23	15 33 41.29	23.217	15 16 35.0	104.74
24	13 50 28.19	20.906	S. 6 0 16.4	127.13	24	15 36 0.77	23.277	S. 15 27 1.0	103.93

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 5.					WEDNESDAY 7.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	15 36 0.77	23.277	S. 15 27 1.0	103.93	0	17 34 41.27	26.053	S. 21 44 20.1	47.70
1	15 38 20.61	23.338	15 37 22.2	103.12	1	17 37 17.72	26.098	21 49 1.8	46.20
2	15 40 40.82	23.399	15 47 38.4	102.28	2	17 39 54.44	26.142	21 53 34.5	44.68
3	15 43 1.40	23.460	15 57 49.5	101.43	3	17 42 31.42	26.184	21 57 58.0	43.15
4	15 45 22.34	23.521	16 7 55.5	100.57	4	17 45 8.65	26.226	22 2 12.3	41.61
5	15 47 43.65	23.583	16 17 56.3	99.68	5	17 47 46.13	26.266	22 6 17.3	40.07
6	15 50 5.33	23.643	16 27 51.7	98.78	6	17 50 23.84	26.305	22 10 13.1	38.51
7	15 52 27.37	23.705	16 37 41.6	97.87	7	17 53 1.79	26.344	22 13 59.4	36.93
8	15 54 49.79	23.767	16 47 26.1	96.94	8	17 55 39.97	26.381	22 17 36.3	35.36
9	15 57 12.57	23.828	16 57 4.9	95.99	9	17 58 18.36	26.417	22 21 3.7	33.78
10	15 59 35.73	23.890	17 6 38.0	95.04	10	18 0 56.97	26.452	22 24 21.6	32.18
11	16 1 59.25	23.952	17 16 5.4	94.07	11	18 3 35.78	26.485	22 27 29.9	30.58
12	16 4 23.15	24.014	17 25 26.8	93.07	12	18 6 14.79	26.518	22 30 28.6	28.98
13	16 6 47.42	24.077	17 34 42.2	92.07	13	18 8 53.99	26.548	22 33 17.6	27.35
14	16 9 12.07	24.138	17 43 51.6	91.05	14	18 11 33.37	26.578	22 35 56.8	25.73
15	16 11 37.08	24.200	17 52 54.8	90.02	15	18 14 12.93	26.607	22 38 26.3	24.09
16	16 14 2.47	24.263	18 1 51.8	88.97	16	18 16 52.65	26.633	22 40 45.9	22.45
17	16 16 28.23	24.324	18 10 42.4	87.89	17	18 19 32.53	26.660	22 42 55.7	20.81
18	16 18 54.36	24.386	18 19 26.5	86.81	18	18 22 12.57	26.684	22 44 55.6	19.15
19	16 21 20.86	24.448	18 28 4.1	85.72	19	18 24 52.74	26.706	22 46 45.5	17.49
20	16 23 47.73	24.509	18 36 35.1	84.61	20	18 27 33.04	26.728	22 48 25.5	15.83
21	16 26 14.97	24.570	18 44 59.4	83.48	21	18 30 13.47	26.748	22 49 55.5	14.16
22	16 28 42.57	24.631	18 53 16.9	82.34	22	18 32 54.02	26.768	22 51 15.4	12.48
23	16 31 10.54	24.693	S. 19 1 27.5	81.18	23	18 35 34.68	26.786	S. 22 52 25.3	10.81
TUESDAY 6.					THURSDAY 8.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	16 33 38.88	24.753	S. 19 9 31.1	80.02	0	18 38 15.44	26.801	S. 22 53 25.1	9.13
1	16 36 7.58	24.813	19 17 27.7	78.83	1	18 40 56.29	26.815	22 54 14.8	7.44
2	16 38 36.64	24.873	19 25 17.1	77.63	2	18 43 37.22	26.828	22 54 54.4	5.75
3	16 41 6.05	24.932	19 32 59.3	76.42	3	18 46 18.22	26.839	22 55 23.8	4.06
4	16 43 35.82	24.992	19 40 34.1	75.18	4	18 48 59.29	26.849	22 55 43.1	2.38
5	16 46 5.95	25.051	19 48 1.5	73.93	5	18 51 40.41	26.858	22 55 52.3	0.68
6	16 48 36.43	25.109	19 55 21.3	72.68	6	18 54 21.58	26.864	22 55 51.2	1.03
7	16 51 7.26	25.167	20 2 33.6	71.41	7	18 57 2.78	26.869	22 55 40.0	2.72
8	16 53 38.43	25.224	20 9 38.2	70.12	8	18 59 44.01	26.874	22 55 18.6	4.42
9	16 56 9.95	25.282	20 16 35.0	68.82	9	19 2 25.27	26.877	22 54 47.0	6.12
10	16 58 41.81	25.338	20 23 24.0	67.51	10	19 5 6.53	26.877	22 54 5.2	7.82
11	17 1 14.00	25.393	20 30 5.1	66.18	11	19 7 47.79	26.877	22 53 13.2	9.52
12	17 3 46.52	25.448	20 36 38.1	64.83	12	19 10 29.05	26.875	22 52 11.0	11.22
13	17 6 19.38	25.503	20 43 3.1	63.48	13	19 13 10.29	26.871	22 50 58.6	12.91
14	17 8 52.56	25.557	20 49 19.8	62.10	14	19 15 51.50	26.865	22 49 36.1	14.60
15	17 11 26.06	25.610	20 55 28.3	60.72	15	19 18 32.67	26.858	22 48 3.4	16.29
16	17 13 59.88	25.663	21 1 28.4	59.32	16	19 21 13.80	26.851	22 46 20.6	17.98
17	17 16 34.01	25.714	21 7 20.1	57.92	17	19 23 54.88	26.842	22 44 27.6	19.68
18	17 19 8.45	25.765	21 13 3.4	56.49	18	19 26 35.90	26.830	22 42 24.5	21.36
19	17 21 43.19	25.815	21 18 38.0	55.05	19	19 29 16.84	26.818	22 40 11.3	23.03
20	17 24 18.23	25.865	21 24 4.0	53.61	20	19 31 57.71	26.803	22 37 48.1	24.71
21	17 26 53.57	25.913	21 29 21.3	52.15	21	19 34 38.48	26.788	22 35 14.8	26.38
22	17 29 29.19	25.960	21 34 29.8	50.68	22	19 37 19.16	26.771	22 32 31.5	28.04
23	17 32 5.09	26.007	21 39 29.4	49.19	23	19 39 59.73	26.753	22 29 38.3	29.70
24	17 34 41.27	26.053	S. 21 44 20.1	47.70	24	19 42 40.19	26.733	S. 22 26 35.1	31.37

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 9.					SUNDAY 11.				
	h m s		° ' "			h m s		° ' "	
0	19 42 40.19	26.733	S. 22 26 35.1	31.37	0	21 46 27.19	24.511	S. 17 4 13.4	97.87
1	19 45 20.52	26.711	22 23 21.9	33.02	1	21 48 54.07	24.449	16 54 23.1	98.88
2	19 48 0.72	26.688	22 19 58.9	34.65	2	21 51 20.58	24.387	16 44 26.8	99.88
3	19 50 40.78	26.663	22 16 26.1	36.29	3	21 53 46.71	24.324	16 34 24.5	100.88
4	19 53 20.68	26.638	22 12 43.4	37.93	4	21 56 12.47	24.262	16 24 16.3	101.85
5	19 56 0.43	26.612	22 8 51.0	39.54	5	21 58 37.85	24.199	16 14 2.3	102.81
6	19 58 40.02	26.584	22 4 48.9	41.16	6	22 1 2.86	24.138	16 3 42.6	103.74
7	20 1 19.44	26.554	22 0 37.1	42.76	7	22 3 27.50	24.075	15 53 17.4	104.66
8	20 3 58.67	26.523	21 56 15.8	44.35	8	22 5 51.76	24.012	15 42 46.7	105.57
9	20 6 37.71	26.491	21 51 44.9	45.94	9	22 8 15.64	23.948	15 32 10.6	106.45
10	20 9 16.56	26.458	21 47 4.5	47.53	10	22 10 39.14	23.886	15 21 29.3	107.32
11	20 11 55.21	26.424	21 42 14.6	49.09	11	22 13 2.27	23.824	15 10 42.8	108.17
12	20 14 33.65	26.388	21 37 15.4	50.64	12	22 15 25.03	23.762	14 59 51.3	108.99
13	20 17 11.86	26.350	21 32 6.9	52.19	13	22 17 47.41	23.698	14 48 54.9	109.81
14	20 19 49.85	26.313	21 26 49.1	53.73	14	22 20 9.41	23.636	14 37 53.6	110.61
15	20 22 27.61	26.273	21 21 22.1	55.26	15	22 22 31.04	23.573	14 26 47.6	111.38
16	20 25 5.13	26.233	21 15 46.0	56.77	16	22 24 52.29	23.511	14 15 37.0	112.15
17	20 27 42.40	26.191	21 10 0.9	58.27	17	22 27 13.17	23.449	14 4 21.8	112.90
18	20 30 19.42	26.148	21 4 6.8	59.76	18	22 29 33.68	23.387	13 53 2.2	113.63
19	20 32 56.18	26.104	20 58 3.8	61.24	19	22 31 53.81	23.325	13 41 38.2	114.36
20	20 35 32.67	26.060	20 51 51.9	62.71	20	22 34 13.58	23.264	13 30 9.9	115.05
21	20 38 8.90	26.015	20 45 31.3	64.17	21	22 36 32.98	23.203	13 18 37.6	115.72
22	20 40 44.85	25.968	20 39 1.9	65.61	22	22 38 52.01	23.142	13 7 1.3	116.38
23	20 43 20.52	25.921	S. 20 32 24.0	67.03	23	22 41 10.68	23.081	S. 12 55 21.0	117.04
SATURDAY 10.					MONDAY 12.				
	h m s		° ' "			h m s		° ' "	
0	20 45 55.90	25.872	S. 20 25 37.5	68.45	0	22 43 28.98	23.020	S. 12 43 36.8	117.67
1	20 48 30.98	25.823	20 18 42.6	69.85	1	22 45 46.92	22.960	12 31 49.0	118.28
2	20 51 5.77	25.773	20 11 39.3	71.23	2	22 48 4.50	22.900	12 19 57.5	118.88
3	20 53 40.25	25.722	20 4 27.8	72.61	3	22 50 21.72	22.841	12 8 2.4	119.46
4	20 56 14.43	25.670	19 57 8.0	73.97	4	22 52 38.59	22.782	11 56 4.0	120.02
5	20 58 48.29	25.617	19 49 40.2	75.31	5	22 54 55.10	22.723	11 44 2.2	120.58
6	21 1 21.83	25.563	19 42 4.3	76.64	6	22 57 11.26	22.664	11 31 57.1	121.11
7	21 3 55.05	25.510	19 34 20.5	77.95	7	22 59 27.07	22.607	11 19 48.9	121.62
8	21 6 27.95	25.456	19 26 28.9	79.25	8	23 1 42.54	22.549	11 7 37.7	122.12
9	21 9 0.52	25.400	19 18 29.5	80.54	9	23 3 57.66	22.491	10 55 23.5	122.61
10	21 11 32.75	25.343	19 10 22.4	81.81	10	23 6 12.43	22.434	10 43 6.4	123.08
11	21 14 4.64	25.288	19 2 7.8	83.06	11	23 8 26.87	22.378	10 30 46.6	123.53
12	21 16 36.20	25.231	18 53 45.7	84.29	12	23 10 40.97	22.322	10 18 24.1	123.97
13	21 19 7.41	25.173	18 45 16.3	85.52	13	23 12 54.73	22.267	10 5 59.0	124.39
14	21 21 38.27	25.114	18 36 39.5	86.73	14	23 15 8.17	22.212	9 53 31.4	124.79
15	21 24 8.78	25.055	18 27 55.6	87.91	15	23 17 21.27	22.157	9 41 1.5	125.18
16	21 26 38.93	24.996	18 19 4.6	89.08	16	23 19 34.05	22.103	9 28 29.3	125.55
17	21 29 8.73	24.937	18 10 6.6	90.23	17	23 21 46.50	22.049	9 15 54.9	125.92
18	21 31 38.17	24.877	18 1 1.8	91.38	18	23 23 58.64	21.997	9 3 18.3	126.27
19	21 34 7.25	24.817	17 51 50.1	92.51	19	23 26 10.46	21.943	8 50 39.7	126.60
20	21 36 35.97	24.757	17 42 31.7	93.61	20	23 28 21.96	21.891	8 37 59.1	126.92
21	21 39 4.33	24.696	17 33 6.8	94.70	21	23 30 33.15	21.839	8 25 16.7	127.22
22	21 41 32.32	24.634	17 23 35.3	95.78	22	23 32 44.03	21.788	8 12 32.5	127.50
23	21 43 59.94	24.573	17 13 57.5	96.83	23	23 34 54.61	21.738	7 59 46.7	127.78
24	21 46 27.19	24.511	S. 17 4 13.4	97.87	24	23 37 4.89	21.688	S. 7 46 59.2	128.04

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 13.					THURSDAY 15.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	23 37 4.89	21.688	S. 7 46 59.2	128.04	0	1 16 34.98	20.015	N. 2 33 40.4	126.31
1	23 39 14.87	21.638	7 34 10.2	128.28	1	1 18 35.01	19.995	2 46 17.4	126.03
2	23 41 24.55	21.589	7 21 19.8	128.52	2	1 20 34.92	19.976	2 58 52.7	125.73
3	23 43 33.94	21.542	7 8 28.0	128.73	3	1 22 34.72	19.958	3 11 26.2	125.43
4	23 45 43.05	21.494	6 55 35.0	128.93	4	1 24 34.41	19.940	3 23 57.8	125.12
5	23 47 51.87	21.447	6 42 40.8	129.13	5	1 26 34.00	19.923	3 36 27.6	124.80
6	23 50 0.41	21.400	6 29 45.5	129.31	6	1 28 33.49	19.908	3 48 55.4	124.48
7	23 52 8.67	21.354	6 16 49.1	129.48	7	1 30 32.89	19.892	4 1 21.3	124.14
8	23 54 16.66	21.309	6 3 51.8	129.63	8	1 32 32.19	19.877	4 13 45.1	123.79
9	23 56 24.38	21.264	5 50 53.6	129.77	9	1 34 31.41	19.862	4 26 6.8	123.44
10	23 58 31.83	21.220	5 37 54.6	129.89	10	1 36 30.53	19.848	4 38 26.4	123.09
11	0 0 39.02	21.177	5 24 54.9	130.00	11	1 38 29.58	19.835	4 50 43.9	122.73
12	0 2 45.95	21.134	5 11 54.6	130.10	12	1 40 28.55	19.823	5 2 59.1	122.35
13	0 4 52.63	21.092	4 58 53.7	130.19	13	1 42 27.45	19.810	5 15 12.1	121.97
14	0 6 59.05	21.050	4 45 52.3	130.27	14	1 44 26.27	19.798	5 27 22.7	121.58
15	0 9 5.23	21.010	4 32 50.5	130.33	15	1 46 25.03	19.788	5 39 31.0	121.18
16	0 11 11.17	20.969	4 19 48.4	130.38	16	1 48 23.73	19.778	5 51 36.9	120.78
17	0 13 16.86	20.929	4 6 46.0	130.42	17	1 50 22.37	19.768	6 3 40.3	120.37
18	0 15 22.32	20.890	3 53 43.4	130.44	18	1 52 20.95	19.759	6 15 41.3	119.96
19	0 17 27.54	20.851	3 40 40.7	130.46	19	1 54 19.48	19.750	6 27 39.8	119.53
20	0 19 32.53	20.813	3 27 37.9	130.47	20	1 56 17.95	19.742	6 39 35.7	119.10
21	0 21 37.36	20.777	3 14 35.1	130.46	21	1 58 16.38	19.735	6 51 29.0	118.66
22	0 23 41.85	20.740	3 1 32.4	130.44	22	2 0 14.77	19.728	7 3 19.6	118.21
23	0 25 46.18	20.703	S. 2 48 29.8	130.42	23	2 2 13.12	19.722	N. 7 15 7.5	117.76
WEDNESDAY 14.					FRIDAY 16.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	0 27 50.29	20.668	S. 2 35 27.4	130.37	0	2 4 11.43	19.716	N. 7 26 52.7	117.30
1	0 29 54.20	20.634	2 22 25.4	130.31	1	2 6 9.71	19.711	7 38 35.1	116.83
2	0 31 57.90	20.600	2 9 23.7	130.25	2	2 8 7.96	19.706	7 50 14.7	116.37
3	0 34 1.40	20.566	1 56 22.4	130.18	3	2 10 6.18	19.702	8 1 51.5	115.88
4	0 36 4.69	20.533	1 43 21.6	130.09	4	2 12 4.38	19.698	8 13 25.3	115.39
5	0 38 7.80	20.502	1 30 21.3	130.00	5	2 14 2.56	19.695	8 24 56.2	114.90
6	0 40 10.72	20.470	1 17 21.6	129.89	6	2 16 0.72	19.693	8 36 24.1	114.40
7	0 42 13.44	20.439	1 4 22.6	129.77	7	2 17 58.87	19.690	8 47 49.0	113.90
8	0 44 15.99	20.409	0 51 24.4	129.64	8	2 19 57.00	19.688	8 59 10.9	113.38
9	0 46 18.35	20.379	0 38 26.9	129.51	9	2 21 55.13	19.688	9 10 29.6	112.86
10	0 48 20.54	20.351	0 25 30.3	129.36	10	2 23 53.26	19.688	9 21 45.2	112.34
11	0 50 22.56	20.323	S. 0 12 34.6	129.20	11	2 25 51.38	19.688	9 32 57.7	111.81
12	0 52 24.41	20.295	N. 0 0 20.1	129.03	12	2 27 49.51	19.688	9 44 6.9	111.27
13	0 54 26.10	20.268	0 13 13.8	128.86	13	2 29 47.64	19.689	9 55 12.9	110.73
14	0 56 27.63	20.242	0 26 6.4	128.68	14	2 31 45.78	19.691	10 6 15.6	110.18
15	0 58 29.00	20.216	0 38 57.9	128.48	15	2 33 43.93	19.693	10 17 15.0	109.62
16	1 0 30.22	20.191	0 51 48.1	128.27	16	2 35 42.09	19.695	10 28 11.0	109.05
17	1 2 31.29	20.167	1 4 37.1	128.06	17	2 37 40.27	19.698	10 39 3.6	108.48
18	1 4 32.22	20.143	1 17 24.8	127.84	18	2 39 38.47	19.702	10 49 52.8	107.91
19	1 6 33.01	20.120	1 30 11.2	127.61	19	2 41 36.69	19.705	11 0 38.5	107.33
20	1 8 33.66	20.098	1 42 56.1	127.36	20	2 43 34.93	19.709	11 11 20.7	106.74
21	1 10 34.18	20.076	1 55 39.5	127.11	21	2 45 33.20	19.714	11 21 59.4	106.15
22	1 12 34.57	20.054	2 8 21.4	126.85	22	2 47 31.50	19.720	11 32 34.5	105.55
23	1 14 34.83	20.034	2 21 1.7	126.58	23	2 49 29.84	19.726	11 43 6.0	104.95
24	1 16 34.98	20.015	N. 2 33 40.4	126.31	24	2 51 28.21	19.732	N. 11 53 33.9	104.34

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 17.					MONDAY 19.				
0	2 51 28.21	19.732	N. 11 53 33.9	104.34	0	4 27 34.65	20.420	N. 18 53 39.0	68.63
1	2 53 26.62	19.738	12 3 58.1	103.73	1	4 29 37.23	20.440	19 0 28.5	67.82
2	2 55 25.07	19.745	12 14 18.6	103.10	2	4 31 39.93	20.459	19 7 12.8	66.95
3	2 57 23.56	19.753	12 24 35.3	102.48	3	4 33 42.74	20.479	19 13 51.9	66.07
4	2 59 22.10	19.761	12 34 48.3	101.84	4	4 35 45.68	20.499	19 20 25.6	65.18
5	3 1 20.69	19.769	12 44 57.4	101.20	5	4 37 48.73	20.518	19 26 54.1	64.31
6	3 3 19.33	19.778	12 55 2.7	100.56	6	4 39 51.90	20.539	19 33 17.3	63.42
7	3 5 18.02	19.787	13 5 4.1	99.91	7	4 41 55.20	20.559	19 39 35.1	62.52
8	3 7 16.77	19.796	13 15 1.6	99.25	8	4 43 58.61	20.579	19 45 47.5	61.62
9	3 9 15.57	19.805	13 24 55.1	98.59	9	4 46 2.15	20.599	19 51 54.5	60.71
10	3 11 14.43	19.816	13 34 44.7	97.93	10	4 48 5.80	20.619	19 57 56.0	59.80
11	3 13 13.36	19.827	13 44 30.2	97.25	11	4 50 9.58	20.639	20 3 52.1	58.89
12	3 15 12.35	19.838	13 54 11.7	96.58	12	4 52 13.47	20.659	20 9 42.7	57.98
13	3 17 11.41	19.849	14 3 49.1	95.89	13	4 54 17.49	20.679	20 15 27.8	57.05
14	3 19 10.54	19.861	14 13 22.4	95.20	14	4 56 21.62	20.699	20 21 7.3	56.12
15	3 21 9.74	19.873	14 22 51.5	94.51	15	4 58 25.88	20.719	20 26 41.2	55.19
16	3 23 9.01	19.885	14 32 16.5	93.81	16	5 0 30.25	20.739	20 32 9.6	54.26
17	3 25 8.36	19.898	14 41 37.2	93.10	17	5 2 34.75	20.759	20 37 32.3	53.31
18	3 27 7.78	19.911	14 50 53.7	92.39	18	5 4 39.36	20.779	20 42 49.3	52.37
19	3 29 7.29	19.924	15 0 5.9	91.68	19	5 6 44.10	20.799	20 48 0.7	51.43
20	3 31 6.87	19.938	15 9 13.8	90.95	20	5 8 48.95	20.819	20 53 6.4	50.47
21	3 33 6.54	19.952	15 18 17.3	90.23	21	5 10 53.93	20.839	20 58 6.3	49.51
22	3 35 6.29	19.966	15 27 16.5	89.50	22	5 12 59.02	20.858	21 3 0.5	48.55
23	3 37 6.13	19.981	N. 15 36 11.3	88.76	23	5 15 4.23	20.878	N. 21 7 48.9	47.58
SUNDAY 18.					TUESDAY 20.				
0	3 39 6.06	19.996	N. 15 45 1.6	88.02	0	5 17 9.55	20.897	N. 21 12 31.5	46.62
1	3 41 6.08	20.011	15 53 47.5	87.28	1	5 19 14.99	20.917	21 17 8.3	45.64
2	3 43 6.19	20.027	16 2 28.9	86.52	2	5 21 20.55	20.936	21 21 39.2	44.67
3	3 45 6.40	20.043	16 11 5.7	85.76	3	5 23 26.22	20.955	21 26 4.3	43.68
4	3 47 6.70	20.058	16 19 38.0	85.00	4	5 25 32.01	20.973	21 30 23.4	42.69
5	3 49 7.09	20.074	16 28 5.7	84.23	5	5 27 37.90	20.992	21 34 36.6	41.71
6	3 51 7.59	20.091	16 36 28.8	83.46	6	5 29 43.91	21.011	21 38 43.9	40.73
7	3 53 8.18	20.107	16 44 47.2	82.68	7	5 31 50.03	21.030	21 42 45.3	39.73
8	3 55 8.87	20.124	16 53 1.0	81.90	8	5 33 56.27	21.048	21 46 40.6	38.72
9	3 57 9.67	20.142	17 1 10.0	81.11	9	5 36 2.61	21.065	21 50 29.9	37.72
10	3 59 10.57	20.158	17 9 14.3	80.32	10	5 38 9.05	21.083	21 54 13.2	36.72
11	4 1 11.57	20.176	17 17 13.8	79.52	11	5 40 15.61	21.102	21 57 50.5	35.70
12	4 3 12.68	20.194	17 25 8.5	78.72	12	5 42 22.27	21.118	22 1 21.6	34.68
13	4 5 13.90	20.212	17 32 58.4	77.91	13	5 44 29.03	21.136	22 4 46.7	33.67
14	4 7 15.22	20.230	17 40 43.4	77.08	14	5 46 35.90	21.153	22 8 5.7	32.65
15	4 9 16.66	20.249	17 48 23.4	76.27	15	5 48 42.87	21.170	22 11 18.5	31.63
16	4 11 18.21	20.267	17 55 58.6	75.45	16	5 50 49.94	21.186	22 14 25.2	30.60
17	4 13 19.86	20.285	18 3 28.8	74.62	17	5 52 57.10	21.203	22 17 25.7	29.58
18	4 15 21.63	20.304	18 10 54.0	73.78	18	5 55 4.37	21.219	22 20 20.1	28.54
19	4 17 23.51	20.323	18 18 14.2	72.95	19	5 57 11.73	21.234	22 23 8.2	27.49
20	4 19 25.51	20.343	18 25 29.4	72.11	20	5 59 19.18	21.250	22 25 50.0	26.45
21	4 21 27.62	20.362	18 32 39.5	71.26	21	6 1 26.73	21.266	22 28 25.6	25.42
22	4 23 29.85	20.381	18 39 44.5	70.41	22	6 3 34.37	21.280	22 30 55.0	24.37
23	4 25 32.19	20.400	18 46 44.4	69.54	23	6 5 42.09	21.295	22 33 18.0	23.31
24	4 27 34.65	20.420	N. 18 53 39.0	68.68	24	6 7 49.91	21.310	N. 22 35 34.7	22.26

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 21.					FRIDAY 23.				
0	6 7 49.91	21.310	N.22 35 34.7	22.26	0	7 51 6.31	21.570	N.22 17 50.8	29.93
1	6 9 57.81	21.324	22 37 45.1	21.21	1	7 53 15.72	21.566	22 14 47.9	31.02
2	6 12 5.80	21.338	22 39 49.2	20.15	2	7 55 25.10	21.561	22 11 38.5	32.10
3	6 14 13.86	21.351	22 41 46.9	19.08	3	7 57 34.45	21.556	22 8 22.7	33.18
4	6 16 22.01	21.365	22 43 38.2	18.03	4	7 59 43.77	21.550	22 5 0.3	34.27
5	6 18 30.24	21.378	22 45 23.2	16.97	5	8 1 53.05	21.544	22 1 31.4	35.35
6	6 20 38.54	21.389	22 47 1.8	15.90	6	8 4 2.30	21.538	21 57 56.1	36.43
7	6 22 46.91	21.402	22 48 34.0	14.83	7	8 6 11.50	21.531	21 54 14.3	37.51
8	6 24 55.36	21.414	22 49 59.7	13.75	8	8 8 20.67	21.524	21 50 26.0	38.58
9	6 27 3.88	21.425	22 51 19.0	12.68	9	8 10 29.79	21.517	21 46 31.3	39.65
10	6 29 12.46	21.436	22 52 31.9	11.61	10	8 12 38.87	21.509	21 42 30.2	40.72
11	6 31 21.11	21.448	22 53 38.3	10.53	11	8 14 47.90	21.501	21 38 22.7	41.78
12	6 33 29.83	21.458	22 54 38.2	9.45	12	8 16 56.88	21.493	21 34 8.8	42.84
13	6 35 38.61	21.468	22 55 31.7	8.37	13	8 19 5.81	21.483	21 29 48.6	43.90
14	6 37 47.45	21.478	22 56 18.6	7.28	14	8 21 14.68	21.474	21 25 22.0	44.97
15	6 39 56.34	21.487	22 56 59.1	6.21	15	8 23 23.50	21.465	21 20 49.0	46.02
16	6 42 5.29	21.496	22 57 33.1	5.12	16	8 25 32.26	21.455	21 16 9.8	47.07
17	6 44 14.29	21.504	22 58 0.5	4.03	17	8 27 40.96	21.445	21 11 24.2	48.12
18	6 46 23.34	21.513	22 58 21.4	2.94	18	8 29 49.60	21.434	21 6 32.4	49.16
19	6 48 32.44	21.520	22 58 35.8	1.85	19	8 31 58.17	21.423	21 1 34.3	50.21
20	6 50 41.58	21.528	22 58 43.6	0.75	20	8 34 6.68	21.413	20 56 29.9	51.25
21	6 52 50.77	21.535	22 58 44.8	0.34	21	8 36 15.13	21.402	20 51 19.3	52.28
22	6 55 0.00	21.542	22 58 39.5	1.43	22	8 38 23.50	21.390	20 46 2.6	53.31
23	6 57 9.27	21.548	N.22 58 27.7	2.52	23	8 40 31.81	21.378	N.20 40 39.6	54.34
THURSDAY 22.					SATURDAY 24.				
0	6 59 18.57	21.553	N.22 58 9.3	3.62	0	8 42 40.04	21.366	N.20 35 10.5	55.36
1	7 1 27.91	21.559	22 57 44.3	4.72	1	8 44 48.20	21.353	20 29 35.3	56.38
2	7 3 37.28	21.564	22 57 12.7	5.82	2	8 46 56.28	21.340	20 23 53.9	57.40
3	7 5 46.68	21.568	22 56 34.5	6.91	3	8 49 4.28	21.328	20 18 6.5	58.41
4	7 7 56.10	21.573	22 55 49.8	8.01	4	8 51 12.21	21.315	20 12 13.0	59.42
5	7 10 5.55	21.576	22 54 58.4	9.11	5	8 53 20.06	21.302	20 6 13.5	60.43
6	7 12 15.01	21.579	22 54 0.5	10.21	6	8 55 27.83	21.288	20 0 7.9	61.43
7	7 14 24.50	21.583	22 52 55.9	11.31	7	8 57 35.51	21.273	19 53 56.4	62.41
8	7 16 34.01	21.586	22 51 44.8	12.41	8	8 59 43.11	21.260	19 47 39.0	63.40
9	7 18 43.53	21.588	22 50 27.0	13.51	9	9 1 50.63	21.246	19 41 15.6	64.39
10	7 20 53.06	21.589	22 49 2.7	14.61	10	9 3 58.06	21.231	19 34 46.3	65.37
11	7 23 2.60	21.590	22 47 31.7	15.71	11	9 6 5.40	21.216	19 28 11.2	66.34
12	7 25 12.14	21.591	22 45 54.2	16.80	12	9 8 12.65	21.202	19 21 30.2	67.32
13	7 27 21.69	21.592	22 44 10.1	17.90	13	9 10 19.82	21.187	19 14 43.4	68.28
14	7 29 31.24	21.592	22 42 19.4	19.00	14	9 12 26.89	21.171	19 7 50.8	69.24
15	7 31 40.79	21.592	22 40 22.1	20.10	15	9 14 33.87	21.156	19 0 52.5	70.20
16	7 33 50.34	21.591	22 38 18.2	21.20	16	9 16 40.76	21.141	18 53 48.4	71.15
17	7 35 59.88	21.589	22 36 7.7	22.29	17	9 18 47.56	21.126	18 46 38.7	72.09
18	7 38 9.41	21.588	22 33 50.7	23.38	18	9 20 54.27	21.110	18 39 23.3	73.04
19	7 40 18.94	21.587	22 31 27.1	24.48	19	9 23 0.88	21.093	18 32 2.2	73.97
20	7 42 28.45	21.583	22 28 56.9	25.58	20	9 25 7.39	21.078	18 24 35.6	74.89
21	7 44 37.94	21.581	22 26 20.2	26.67	21	9 27 13.81	21.062	18 17 3.5	75.82
22	7 46 47.42	21.578	22 23 36.9	27.76	22	9 29 20.13	21.045	18 9 25.8	76.74
23	7 48 56.88	21.574	22 20 47.1	28.84	23	9 31 26.35	21.028	18 1 42.6	77.66
24	7 51 6.31	21.570	N.22 17 50.8	29.93	24	9 33 32.47	21.013	N.17 53 53.9	78.57

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 25.					TUESDAY 27.				
0	9 33 32.47	21.013	N. 17 53 53.9	78.57	0	11 12 35.37	20.312	N. 10 5 2.5	113.95
1	9 35 38.50	20.997	17 45 59.8	79.47	1	11 14 37.21	20.303	9 53 37.2	114.49
2	9 37 44.43	20.980	17 38 0.3	80.36	2	11 16 39.00	20.293	9 42 8.6	115.03
3	9 39 50.26	20.963	17 29 55.5	81.24	3	11 18 40.73	20.284	9 30 36.8	115.56
4	9 41 55.99	20.947	17 21 45.4	82.13	4	11 20 42.41	20.276	9 19 1.9	116.08
5	9 44 1.62	20.930	17 13 30.0	83.01	5	11 22 44.04	20.268	9 7 23.9	116.58
6	9 46 7.15	20.914	17 5 9.3	83.88	6	11 24 45.62	20.260	8 55 42.9	117.08
7	9 48 12.59	20.898	16 56 43.4	84.74	7	11 26 47.16	20.253	8 43 58.9	117.58
8	9 50 17.92	20.880	16 48 12.4	85.60	8	11 28 48.66	20.246	8 32 11.9	118.07
9	9 52 23.15	20.864	16 39 36.2	86.45	9	11 30 50.11	20.239	8 20 22.1	118.54
10	9 54 28.29	20.848	16 30 55.0	87.29	10	11 32 51.53	20.233	8 8 29.4	119.01
11	9 56 33.32	20.830	16 22 8.7	88.13	11	11 34 52.91	20.227	7 56 34.0	119.47
12	9 58 38.25	20.814	16 13 17.5	88.95	12	11 36 54.25	20.221	7 44 35.8	119.92
13	10 0 43.09	20.798	16 4 21.3	89.78	13	11 38 55.56	20.216	7 32 35.0	120.35
14	10 2 47.82	20.781	15 55 20.1	90.60	14	11 40 56.84	20.212	7 20 31.6	120.78
15	10 4 52.46	20.765	15 46 14.1	91.41	15	11 42 58.10	20.208	7 8 25.6	121.21
16	10 6 57.00	20.748	15 37 3.2	92.22	16	11 44 59.33	20.203	6 56 17.1	121.62
17	10 9 1.44	20.733	15 27 47.5	93.02	17	11 47 0.54	20.200	6 44 6.2	122.03
18	10 11 5.79	20.717	15 18 27.0	93.80	18	11 49 1.73	20.198	6 31 52.8	122.42
19	10 13 10.04	20.700	15 9 1.9	94.58	19	11 51 2.91	20.195	6 19 37.2	122.79
20	10 15 14.19	20.684	14 59 32.1	95.36	20	11 53 4.07	20.193	6 7 19.3	123.17
21	10 17 18.25	20.668	14 49 57.6	96.13	21	11 55 5.22	20.191	5 54 59.1	123.54
22	10 19 22.21	20.653	14 40 18.5	96.89	22	11 57 6.36	20.190	5 42 36.8	123.90
23	10 21 26.08	20.637	N. 14 30 34.9	97.65	23	11 59 7.50	20.190	N. 5 30 12.3	124.24
MONDAY 26.					WEDNESDAY 28.				
0	10 23 29.85	20.621	N. 14 20 46.7	98.40	0	12 1 8.64	20.190	N. 5 17 45.9	124.58
1	10 25 33.53	20.606	14 10 54.1	99.13	1	12 3 9.78	20.189	5 5 17.4	124.91
2	10 27 37.12	20.591	14 0 57.2	99.86	2	12 5 10.91	20.190	4 52 47.0	125.23
3	10 29 40.62	20.576	13 50 55.8	100.59	3	12 7 12.06	20.192	4 40 14.7	125.53
4	10 31 44.03	20.562	13 40 50.1	101.30	4	12 9 13.21	20.193	4 27 40.6	125.83
5	10 33 47.36	20.547	13 30 40.2	102.01	5	12 11 14.37	20.195	4 15 4.7	126.13
6	10 35 50.59	20.532	13 20 26.0	102.71	6	12 13 15.55	20.198	4 2 27.1	126.40
7	10 37 53.74	20.518	13 10 7.7	103.40	7	12 15 16.75	20.201	3 49 47.9	126.68
8	10 39 56.80	20.503	12 59 45.2	104.09	8	12 17 17.96	20.204	3 37 7.0	126.94
9	10 41 59.78	20.490	12 49 18.6	104.77	9	12 19 19.20	20.209	3 24 24.6	127.18
10	10 44 2.68	20.476	12 38 48.0	105.43	10	12 21 20.47	20.213	3 11 40.8	127.42
11	10 46 5.49	20.463	12 28 13.4	106.09	11	12 23 21.76	20.218	2 58 55.6	127.65
12	10 48 8.23	20.450	12 17 34.9	106.74	12	12 25 23.09	20.224	2 46 9.0	127.88
13	10 50 10.89	20.436	12 6 52.5	107.39	13	12 27 24.45	20.230	2 33 21.1	128.08
14	10 52 13.46	20.423	11 56 6.2	108.03	14	12 29 25.85	20.237	2 20 32.0	128.28
15	10 54 15.97	20.412	11 45 16.1	108.66	15	12 31 27.29	20.244	2 7 41.7	128.48
16	10 56 18.40	20.398	11 34 22.3	109.28	16	12 33 28.78	20.253	1 54 50.2	128.67
17	10 58 20.75	20.387	11 23 24.7	109.90	17	12 35 30.32	20.260	1 41 57.7	128.83
18	11 0 23.04	20.375	11 12 23.5	110.50	18	12 37 31.90	20.269	1 29 4.2	128.99
19	11 2 25.25	20.363	11 1 18.7	111.09	19	12 39 33.55	20.279	1 16 9.8	129.14
20	11 4 27.40	20.353	10 50 10.4	111.68	20	12 41 35.25	20.288	1 3 14.5	129.28
21	11 6 29.49	20.343	10 38 58.6	112.26	21	12 43 37.01	20.298	0 50 18.4	129.42
22	11 8 31.51	20.332	10 27 43.3	112.83	22	12 45 38.83	20.310	0 37 21.5	129.54
23	11 10 33.47	20.322	10 16 24.6	113.40	23	12 47 40.73	20.322	0 24 23.9	129.64
24	11 12 35.37	20.312	N. 10 5 2.5	113.95	24	12 49 42.69	20.333	N. 0 11 25.8	129.74

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 29.					SATURDAY 31.				
0	12 49 42.69	20.333	N. 0 11 25.8	129.74	0	14 29 47.81	21.588	S. 10 2 18.1	121.61
1	12 51 44.73	20.346	S. 0 1 33.0	129.84	1	14 31 57.46	21.628	10 14 26.4	121.15
2	12 53 46.84	20.359	0 14 32.3	129.92	2	14 34 7.34	21.668	10 26 31.9	120.68
3	12 55 49.04	20.373	0 27 32.0	129.98	3	14 36 17.47	21.709	10 38 34.5	120.19
4	12 57 51.32	20.388	0 40 32.1	130.04	4	14 38 27.85	21.751	10 50 34.2	119.71
5	12 59 53.69	20.403	0 53 32.5	130.09	5	14 40 38.48	21.793	11 2 31.0	119.20
6	13 1 56.15	20.418	1 6 33.2	130.13	6	14 42 49.36	21.834	11 14 24.6	118.68
7	13 3 58.71	20.434	1 19 34.1	130.16	7	14 45 0.49	21.878	11 26 15.1	118.14
8	13 6 1.36	20.451	1 32 35.1	130.17	8	14 47 11.89	21.921	11 38 2.3	117.59
9	13 8 4.12	20.468	1 45 36.1	130.18	9	14 49 23.54	21.964	11 49 46.2	117.03
10	13 10 6.98	20.486	1 58 37.2	130.18	10	14 51 35.46	22.008	12 1 26.7	116.47
11	13 12 9.95	20.504	2 11 38.2	130.16	11	14 53 47.64	22.053	12 13 3.8	115.88
12	13 14 13.03	20.523	2 24 39.1	130.13	12	14 56 0.09	22.098	12 24 37.3	115.28
13	13 16 16.23	20.543	2 37 39.8	130.09	13	14 58 12.81	22.143	12 36 7.2	114.68
14	13 18 19.54	20.563	2 50 40.2	130.04	14	15 0 25.81	22.189	12 47 33.4	114.05
15	13 20 22.98	20.584	3 3 40.3	129.98	15	15 2 39.08	22.235	12 58 55.8	113.42
16	13 22 26.55	20.605	3 16 40.0	129.92	16	15 4 52.63	22.282	13 10 14.4	112.77
17	13 24 30.24	20.627	3 29 39.3	129.83	17	15 7 6.46	22.328	13 21 29.0	112.10
18	13 26 34.07	20.649	3 42 38.0	129.73	18	15 9 20.57	22.376	13 32 39.6	111.43
19	13 28 38.03	20.672	3 55 36.1	129.63	19	15 11 34.97	22.424	13 43 46.1	110.74
20	13 30 42.13	20.696	4 8 33.6	129.53	20	15 13 49.66	22.472	13 54 48.5	110.04
21	13 32 46.38	20.720	4 21 30.4	129.39	21	15 16 4.63	22.520	14 5 46.6	109.32
22	13 34 50.77	20.745	4 34 26.3	129.25	22	15 18 19.90	22.569	14 16 40.3	108.59
23	13 36 55.32	20.771	S. 4 47 21.4	129.11	23	15 20 35.46	22.618	S. 14 27 29.7	107.86
FRIDAY 30.					SUNDAY, SEPT. 1.				
0	13 39 0.02	20.796	S. 5 0 15.6	128.95	0	15 22 51.32	22.668	S. 14 38 14.6	107.10
1	13 41 4.87	20.823	5 13 8.8	128.78					
2	13 43 9.89	20.850	5 26 1.0	128.60					
3	13 45 15.07	20.877	5 38 52.0	128.40					
4	13 47 20.41	20.905	5 51 41.8	128.19					
5	13 49 25.93	20.934	6 4 30.3	127.98					
6	13 51 31.62	20.963	6 17 17.6	127.76					
7	13 53 37.49	20.993	6 30 3.4	127.51					
8	13 55 43.54	21.024	6 42 47.7	127.26					
9	13 57 49.78	21.055	6 55 30.5	126.99					
10	13 59 56.20	21.087	7 8 11.6	126.72					
11	14 2 2.82	21.119	7 20 51.1	126.43					
12	14 4 9.63	21.152	7 33 28.8	126.13					
13	14 6 16.64	21.185	7 46 4.7	125.83					
14	14 8 23.85	21.219	7 58 38.7	125.50					
15	14 10 31.27	21.254	8 11 10.7	125.17					
16	14 12 38.90	21.289	8 23 40.7	124.82					
17	14 14 46.74	21.324	8 36 8.5	124.46					
18	14 16 54.79	21.361	8 48 34.2	124.09					
19	14 19 3.07	21.398	9 0 57.6	123.70					
20	14 21 11.56	21.434	9 13 18.6	123.31					
21	14 23 20.28	21.472	9 25 37.3	122.91					
22	14 25 29.22	21.510	9 37 53.5	122.48					
23	14 27 38.40	21.549	9 50 7.1	122.05					
24	14 29 47.81	21.588	S. 10 2 18.1	121.61					

PHASES OF THE MOON.

Aug. 4	☾ First Quarter	-	-	h m	9
10	☉ Full Moon	-	-	16 42	9
17	☾ Last Quarter	-	-	22 51	5
26	● New Moon	-	-	2 0	1

Aug. 8	☾ Perigee	-	-	-	h	19
20	☾ Apogee	-	-	-	19	

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	IIIh.	P.L. of diff.	VIh.	P.L. of diff.	IXh.	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
1	SUN W.	52 7 10	3016	53 37 3	3005	55 7 10	2993	56 37 31	2982
	Antares E.	67 32 4	2721	65 55 52	2713	64 19 29	2704	62 42 54	2695
	Jupiter E.	88 0 2	2655	86 22 22	2646	84 44 29	2635	83 6 21	2626
	α Aquilæ E.	112 5 44	3463	110 44 38	3435	109 23 1	3410	108 0 56	3386
2	SUN W.	64 12 49	2925	65 44 36	2912	67 16 39	2900	68 48 58	2888
	Antares E.	54 36 58	2650	52 59 11	2642	51 21 13	2633	49 43 3	2626
	Jupiter E.	74 52 15	2572	73 12 42	2561	71 32 54	2551	69 52 51	2540
	α Aquilæ E.	101 4 3	3282	99 39 30	3265	98 14 37	3247	96 49 23	3231
3	SUN W.	76 34 27	2826	78 8 21	2812	79 42 33	2800	81 17 1	2788
	Antares E.	41 29 35	2589	39 50 25	2584	38 11 8	2580	36 31 45	2575
	Jupiter E.	61 28 41	2482	59 47 3	2470	58 5 8	2459	56 22 57	2447
	α Aquilæ E.	89 38 54	3164	88 12 2	3154	86 44 58	3144	85 17 42	3135
4	SUN W.	89 13 36	2722	90 49 47	2708	92 26 16	2696	94 3 2	2682
	Spica W.	20 15 2	2687	21 52 0	2634	23 30 9	2590	25 9 18	2553
	Jupiter E.	47 47 47	2387	46 3 53	2375	44 19 43	2362	42 35 14	2351
	α Aquilæ E.	77 59 6	3108	76 31 6	3105	75 3 2	3105	73 34 59	3105
	Fomalhaut E.	111 3 59	2629	109 25 43	2611	107 47 3	2595	106 8 1	2578
5	SUN W.	102 11 16	2618	103 49 47	2605	105 28 35	2593	107 7 40	2580
	Spica W.	33 36 16	2416	35 19 28	2395	37 3 10	2375	38 47 20	2357
	Jupiter E.	33 48 34	2292	32 2 22	2281	30 15 54	2269	28 29 9	2258
	α Aquilæ E.	66 15 34	3136	64 48 8	3149	63 20 58	3164	61 54 6	3182
	Fomalhaut E.	97 47 32	2505	96 6 26	2492	94 25 2	2480	92 43 21	2467
	α Pegasi E.	113 29 27	2789	111 54 45	2766	110 19 33	2744	108 43 51	2722
6	SUN W.	115 27 15	2522	117 7 58	2511	118 48 56	2500	120 30 9	2490
	Spica W.	47 34 25	2278	49 20 57	2264	51 7 49	2251	52 55 1	2239
	α Aquilæ E.	54 46 30	3329	53 22 52	3372	52 0 3	3421	50 38 10	3478
	Fomalhaut E.	84 10 48	2415	82 27 34	2405	80 44 7	2398	79 0 29	2390
	α Pegasi E.	100 38 46	2633	99 0 36	2618	97 22 5	2605	95 43 17	2592
7	Spica W.	61 55 22	2184	63 44 13	2176	65 33 17	2167	67 22 35	2159
	α Aquilæ E.	44 7 20	3897	42 53 57	4018	41 42 35	4157	40 33 28	4314
	Fomalhaut E.	70 20 1	2366	68 35 37	2364	66 51 10	2362	65 6 41	2363
	α Pegasi E.	87 25 26	2546	85 45 17	2540	84 4 59	2535	82 24 35	2532
8	Spica W.	76 31 47	2128	78 22 4	2123	80 12 28	2120	82 2 57	2116
	Antares W.	30 56 3	2227	32 43 51	2209	34 32 5	2195	36 20 40	2183
	Fomalhaut E.	56 25 4	2387	54 41 10	2396	52 57 30	2408	51 14 6	2423
	α Pegasi E.	74 2 1	2536	72 21 38	2540	70 41 21	2548	69 1 15	2556
	α Arietis E.	116 48 45	2272	115 2 4	2263	113 15 10	2255	111 28 4	2247
9	Spica W.	91 16 14	2111	93 6 56	2112	94 57 37	2114	96 48 15	2116
	Antares W.	45 27 15	2147	47 17 3	2144	49 6 55	2142	50 56 50	2140
	Jupiter W.	24 48 29	2068	26 40 18	2068	28 32 7	2069	30 23 54	2070
	Fomalhaut E.	42 43 44	2544	41 3 32	2580	39 24 10	2624	37 45 47	2674
	α Pegasi E.	60 44 41	2633	59 6 31	2657	57 28 53	2682	55 51 49	2711
	α Arietis E.	102 30 26	2228	100 42 40	2227	98 54 52	2227	97 7 4	2228
10	Spica W.	106 0 11	2139	107 50 11	2145	109 40 2	2153	111 29 41	2161
	Antares W.	60 6 24	2149	61 56 8	2153	63 45 46	2159	65 35 16	2164

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	SUN W.	58 8 6	2972	59 38 54	2959	61 9 58	2948	62 41 16	2936
	Antares E.	61 6 7	2685	59 29 7	2677	57 51 56	2668	56 14 33	2659
	Jupiter E.	81 28 1	2615	79 49 26	2604	78 10 37	2593	76 31 33	2583
	α Aquilæ E.	106 38 24	3363	105 15 25	3341	103 52 1	3320	102 28 13	3301
2	SUN W.	70 21 32	2876	71 54 21	2863	73 27 27	2851	75 0 49	2838
	Antares E.	48 4 43	2617	46 26 11	2610	44 47 29	2602	43 8 37	2595
	Jupiter E.	68 12 33	2528	66 31 59	2517	64 51 9	2505	63 10 3	2494
	α Aquilæ E.	95 23 51	3216	93 58 1	3202	92 31 54	3189	91 5 32	3176
3	SUN W.	82 51 45	2774	84 26 47	2761	86 2 6	2747	87 37 43	2735
	Antares E.	34 52 16	2573	33 12 44	2572	31 33 10	2573	29 53 38	2577
	Jupiter E.	54 40 29	2435	52 57 44	2423	51 14 42	2411	49 31 23	2399
	α Aquilæ E.	83 50 15	3128	82 22 39	3121	80 54 54	3115	79 27 3	3110
4	SUN W.	95 40 6	2669	97 17 27	2656	98 55 6	2643	100 33 2	2630
	Spica W.	26 49 18	2520	28 30 4	2490	30 11 31	2463	31 53 36	2438
	Jupiter E.	40 50 29	2339	39 5 26	2327	37 20 6	2315	35 34 28	2304
	α Aquilæ E.	72 6 55	3108	70 38 55	3112	69 11 0	3118	67 43 12	3126
	Fomalhaut E.	104 28 36	2564	102 48 51	2548	101 8 45	2533	99 28 18	2520
5	SUN W.	108 47 2	2568	110 26 41	2556	112 6 36	2544	113 46 48	2533
	Spica W.	40 31 56	2339	42 16 58	2323	44 2 24	2307	45 48 13	2291
	Jupiter E.	26 42 7	2247	24 54 49	2237	23 7 16	2226	21 19 27	2217
	α Aquilæ E.	60 27 35	3204	59 1 30	3229	57 35 55	3257	56 10 53	3290
	Fomalhaut E.	91 1 22	2455	89 19 5	2445	87 36 34	2434	85 53 48	2424
	α Pegasi E.	107 7 40	2702	105 31 3	2683	103 54 1	2666	102 16 35	2649
6	SUN W.	122 11 36	2480	123 53 17	2470	125 35 12	2462	127 17 19	2453
	Spica W.	54 42 31	2227	56 30 19	2215	58 18 24	2204	60 6 45	2194
	α Aquilæ E.	49 17 21	2542	47 57 43	2614	46 39 23	2697	45 22 33	2790
	Fomalhaut E.	77 16 40	2384	75 32 42	2378	73 48 35	2373	72 4 21	2368
	α Pegasi E.	94 4 11	2581	92 24 50	2570	90 45 14	2561	89 5 26	2553
7	Spica W.	69 12 5	2151	71 1 46	2145	72 51 37	2138	74 41 38	2133
	α Aquilæ E.	39 26 48	4494	38 22 51	4702	37 21 53	4941	36 24 11	5218
	Fomalhaut E.	63 22 13	2364	61 37 47	2368	59 53 26	2372	58 9 11	2378
	α Pegasi E.	80 44 6	2530	79 3 34	2530	77 23 2	2530	75 42 30	2532
8	Spica W.	83 53 31	2114	85 44 9	2113	87 34 49	2111	89 25 31	2111
	Antares W.	38 9 33	2172	39 58 42	2165	41 48 3	2158	43 37 34	2151
	Fomalhaut E.	49 31 4	2440	47 48 26	2460	46 6 17	2484	44 24 41	2512
	α Pegasi E.	67 21 20	2568	65 41 41	2580	64 2 19	2596	62 23 18	2613
	α Arietis E.	109 40 47	2241	107 53 21	2237	106 5 48	2233	104 18 9	2230
9	Spica W.	98 38 50	2119	100 29 20	2123	102 19 44	2127	104 10 2	2133
	Antares W.	52 46 48	2141	54 36 45	2141	56 26 41	2143	58 16 35	2146
	Jupiter W.	32 15 39	2073	34 7 19	2077	35 58 54	2081	37 50 23	2085
	Fomalhaut E.	36 8 32	2732	34 32 34	2799	32 58 5	2878	31 25 18	2972
	α Pegasi E.	54 15 24	2744	52 39 43	2781	51 4 50	2823	49 30 52	2869
	α Arietis E.	95 19 18	2229	93 31 34	2232	91 43 54	2236	89 56 20	2241
10	Spica W.	113 19 8	2170	115 8 21	2179	116 57 20	2190	118 46 3	2201
	Antares W.	67 24 38	2171	69 13 49	2178	71 2 49	2186	72 51 38	2196

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
10	Jupiter W.	39 41 46	2090	41 33 0	2096	43 24 5	2102	45 15 1	2110
	α Pegasi E.	47 57 53	2920	46 26 0	2979	44 55 21	3043	43 26 2	3117
	α Arietis E.	88 8 53	2246	86 21 34	2253	84 34 25	2260	82 47 26	2268
	Aldebaran E.	119 23 55	2107	117 33 7	2113	115 42 28	2119	113 51 58	2126
11	Antares W.	74 40 12	2205	76 28 32	2214	78 16 39	2225	80 4 30	2236
	Jupiter W.	54 26 35	2154	56 16 12	2165	58 5 32	2176	59 54 36	2188
	α Aquilæ W.	39 24 28	4367	40 30 19	4215	41 38 31	4081	42 48 51	3963
	α Pegasi E.	36 25 11	3649	35 7 30	3803	33 52 31	3979	32 40 31	4183
	α Arietis E.	73 56 4	2324	72 10 39	2337	70 25 34	2353	68 40 51	2368
	Aldebaran E.	104 42 29	2170	102 53 17	2181	101 4 21	2192	99 15 41	2204
12	Antares W.	88 59 15	2301	90 45 13	2315	92 30 51	2330	94 16 7	2346
	Jupiter W.	68 55 15	2253	70 42 23	2268	72 29 10	2283	74 15 34	2298
	α Aquilæ W.	49 5 32	3567	50 24 42	3516	51 44 48	3471	53 5 45	3432
	α Arietis E.	60 3 21	2462	58 21 14	2484	56 39 38	2507	54 58 35	2531
	Aldebaran E.	90 16 59	2269	88 30 14	2283	86 43 50	2298	84 57 48	2313
	Venus E.	119 15 9	2618	117 36 38	2633	115 58 28	2649	114 20 40	2666
13	Antares W.	102 56 44	2426	104 39 41	2445	106 22 12	2462	108 4 19	2480
	Jupiter W.	83 1 57	2378	84 46 3	2395	86 29 45	2412	88 13 2	2429
	α Aquilæ W.	59 59 30	3310	61 23 30	3297	62 47 45	3287	64 12 12	3279
	α Arietis E.	46 42 24	2677	45 5 13	2711	43 28 48	2748	41 53 12	2788
	Aldebaran E.	76 13 17	2394	74 29 33	2410	72 46 13	2428	71 3 18	2445
	Venus E.	106 17 20	2753	104 41 51	2772	103 6 46	2790	101 32 5	2809
14	Jupiter W.	96 43 21	2517	98 24 11	2534	100 4 37	2552	101 44 38	2569
	α Aquilæ W.	71 15 48	3273	72 40 31	3277	74 5 9	3283	75 29 40	3289
	Fomalhaut W.	35 48 20	3132	37 15 51	3105	38 43 55	3083	40 12 26	3066
	α Arietis E.	34 9 29	3041	32 40 7	3108	31 12 7	3183	29 45 37	3267
	Aldebaran E.	62 34 48	2533	60 54 20	2551	59 14 17	2568	57 34 38	2585
	Venus E.	93 44 49	2904	92 12 35	2924	90 40 47	2942	89 9 22	2962
	SUN E.	136 13 27	2862	134 40 20	2881	133 7 37	2900	131 35 18	2918
15	Jupiter W.	109 58 42	2656	111 36 21	2674	113 13 36	2690	114 50 29	2707
	α Aquilæ W.	82 29 54	3340	83 53 19	3352	85 16 30	3366	86 39 25	3380
	Fomalhaut W.	47 38 47	3029	49 8 24	3029	50 38 1	3030	52 7 37	3032
	α Pegasi W.	35 56 42	4075	37 7 8	3987	38 19 0	3914	39 32 6	3850
	Aldebaran E.	49 22 26	2674	47 45 11	2692	46 8 20	2708	44 31 51	2725
	Venus E.	81 38 21	3058	80 9 20	3076	78 40 41	3095	77 12 25	3113
	SUN E.	123 59 30	3009	122 29 29	3027	120 59 50	3046	119 30 34	3063
16	α Aquilæ W.	93 29 40	3463	94 50 46	3480	96 11 33	3499	97 31 58	3518
	Fomalhaut W.	59 34 29	3058	61 3 30	3065	62 32 23	3072	64 1 7	3080
	α Pegasi W.	45 51 30	3636	47 9 25	3610	48 27 49	3586	49 46 39	3565
	Aldebaran E.	36 35 0	2808	35 0 43	2825	33 26 47	2840	31 53 11	2855
	Venus E.	69 56 30	3200	68 30 21	3217	67 4 32	3233	65 39 2	3249
	SUN E.	112 9 29	3148	110 42 17	3164	109 15 25	3179	107 48 51	3195
17	α Aquilæ W.	104 8 35	3623	105 26 45	3646	106 44 30	3670	108 1 49	3693
	Fomalhaut W.	71 22 18	3121	72 50 2	3129	74 17 36	3138	75 44 59	3147
	α Pegasi W.	56 25 24	3500	57 45 48	3492	59 6 21	3486	60 27 1	3480

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
10	Jupiter W.	47 5 45	2117	48 56 18	2126	50 46 37	2134	52 36 44	2145
	α Pegasi E.	41 58 13	3199	40 32 3	3291	39 7 41	3396	37 45 20	3514
	α Arietis E.	81 0 40	2277	79 14 7	2288	77 27 50	2298	75 41 48	2311
	Aldebaran E.	112 1 39	2134	110 11 32	2142	108 21 37	2151	106 31 56	2161
11	Antares W.	81 52 4	2248	83 39 20	2261	85 26 17	2273	87 12 56	2287
	Jupiter W.	61 43 21	2200	63 31 49	2213	65 19 58	2226	67 7 46	2239
	α Aquilæ W.	44 1 7	3862	45 15 5	3773	46 30 35	3695	47 47 27	3627
	α Pegasi E.	31 31 49	4418	30 26 44	4692	29 25 38	5014	28 28 54	5397
	α Arietis E.	66 56 30	2384	65 12 33	2403	63 29 2	2421	61 45 57	2441
	Aldebaran E.	97 27 19	2216	95 39 15	2229	93 51 30	2241	92 4 4	2256
12	Antares W.	96 1 0	2361	97 45 31	2377	99 29 39	2393	101 13 24	2410
	Jupiter W.	76 1 37	2313	77 47 17	2329	79 32 34	2346	81 17 27	2362
	α Aquilæ W.	54 27 25	3400	55 49 42	3371	57 12 32	3347	58 35 50	3327
	α Arietis E.	53 18 5	2558	51 38 12	2585	49 58 56	2613	48 20 19	2644
	Aldebaran E.	83 12 8	2329	81 26 51	2344	79 41 56	2360	77 57 24	2378
	Venus E.	112 43 14	2683	111 6 11	2699	109 29 30	2717	107 53 13	2735
13	Antares W.	109 46 0	2498	111 27 16	2516	113 8 7	2535	114 48 32	2554
	Jupiter W.	89 55 55	2446	91 38 24	2464	93 20 28	2482	95 2 7	2500
	α Aquilæ W.	65 36 48	3274	67 1 30	3271	68 26 15	3270	69 51 2	3270
	α Arietis E.	40 18 28	2831	38 44 40	2876	37 11 50	2927	35 40 5	2981
	Aldebaran E.	69 20 47	2462	67 38 40	2480	65 56 58	2497	64 15 41	2515
	Venus E.	99 57 49	2828	98 23 57	2846	96 50 29	2866	95 17 27	2885
14	Jupiter W.	103 24 15	2588	105 3 27	2604	106 42 16	2622	108 20 41	2640
	α Aquilæ W.	76 54 4	3297	78 18 19	3306	79 42 23	3317	81 6 15	3328
	Fomalhaut W.	41 41 17	3052	43 10 25	3043	44 39 45	3036	46 9 13	3031
	α Arietis E.	28 20 47	3362	26 57 47	3471	25 36 51	3598	24 18 15	3747
	Aldebaran E.	55 55 23	2604	54 16 33	2621	52 38 7	2639	51 0 5	2656
	Venus E.	87 38 22	2981	86 7 46	3001	84 37 34	3020	83 7 46	3039
	Sun E.	130 3 22	2936	128 31 49	2955	127 0 40	2973	125 29 54	2991
15	Jupiter W.	116 27 0	2723	118 3 9	2740	119 38 56	2755	121 14 23	2772
	α Aquilæ W.	88 2 4	3396	89 24 25	3411	90 46 29	3428	92 8 14	3445
	Fomalhaut W.	53 37 10	3035	55 6 39	3039	56 36 3	3045	58 5 20	3052
	α Pegasi W.	40 46 17	3793	42 1 26	3746	43 17 25	3704	44 34 8	3667
	Aldebaran E.	42 55 45	2742	41 20 1	2759	39 44 39	2775	38 9 39	2792
	Venus E.	75 44 31	3131	74 16 59	3149	72 49 49	3166	71 22 59	3183
	Sun E.	118 1 39	3080	116 33 5	3098	115 4 53	3114	113 37 1	3131
16	α Aquilæ W.	98 52 2	3538	100 11 44	3558	101 31 4	3579	102 50 1	3600
	Fomalhaut W.	65 29 41	3087	66 58 6	3096	68 26 20	3105	69 54 24	3113
	α Pegasi W.	51 5 51	3548	52 25 22	3534	53 45 9	3520	55 5 11	3510
	Aldebaran E.	30 19 55	2872	28 47 0	2887	27 14 25	2902	25 42 9	2918
	Venus E.	64 13 51	3265	62 48 59	3280	61 24 24	3294	60 0 6	3309
	Sun E.	106 22 36	3210	104 56 39	3225	103 30 59	3239	102 5 36	3253
17	α Aquilæ W.	109 18 43	3718	110 35 11	3745	111 51 11	3771	113 6 43	3798
	Fomalhaut W.	77 12 12	3155	78 39 15	3163	80 6 8	3171	81 32 52	3179
	α Pegasi W.	61 47 47	3477	63 8 37	3472	64 29 32	3470	65 50 30	3467

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
17	Venus E. SUN E.	58° 36' 5" 100 40 30	3323 3266	57° 12' 20" 99 15 39	3337 3280	55° 48' 51" 97 51 4	3350 3293	54° 25' 37" 96 26 44	3362 3305
18	Fomalhaut W. α Pegasi W. α Arietis W. Venus E. SUN E.	82 59 26 67 11 31 24 12 19 47 32 53 89 28 24	3187 3466 3969 3418 3359	84 25 51 68 32 33 25 24 29 46 10 57 88 5 21	3194 3464 3875 3423 3368	85 52 7 69 53 37 26 38 14 44 49 12 86 42 28	3202 3463 3795 3438 3378	87 18 14 71 14 42 27 53 21 43 27 38 85 19 46	3209 3463 3727 3446 3386
19	Fomalhaut W. α Pegasi W. α Arietis W. Venus E. SUN E.	94 26 47 78 0 7 34 23 38 36 42 8 78 28 27	3242 3465 3513 3484 3421	95 52 7 79 21 10 35 43 49 35 21 26 77 6 34	3247 3465 3485 3489 3426	97 17 20 80 42 13 37 4 30 34 0 50 75 44 47	3253 3466 3460 3496 3431	98 42 26 82 3 15 38 25 39 32 40 21 74 23 6	3259 3467 3438 3501 3435
20	Fomalhaut W. α Pegasi W. α Arietis W. SUN E.	105 46 24 88 48 6 45 16 47 67 35 45	3284 3472 3357 3451	107 10 54 90 9 1 46 39 53 66 14 26	3289 3473 3345 3453	108 35 18 91 29 55 48 3 13 64 53 9	3293 3475 3333 3454	109 59 38 92 50 47 49 26 46 63 31 53	3298 3477 3322 3455
21	α Pegasi W. α Arietis W. Aldebaran W. SUN E.	99 34 40 56 27 31 23 58 28 56 45 39	3485 3275 3096 3452	100 55 21 57 52 12 25 26 43 55 24 21	3487 3265 3090 3451	102 16 0 59 17 4 26 55 5 54 3 2	3488 3257 3086 3448	103 36 37 60 42 6 28 23 32 52 41 40	3492 3248 3081 3446
22	α Pegasi W. α Arietis W. Aldebaran W. SUN E.	110 18 50 67 49 42 35 47 19 45 54 4	3509 3208 3055 3430	111 39 4 69 15 42 37 16 24 44 32 21	3514 3199 3049 3425	112 59 13 70 41 52 38 45 36 43 10 33	3520 3192 3043 3421	114 19 15 72 8 11 40 14 56 41 48 40	3525 3183 3037 3416
23	α Arietis W. Aldebaran W. SUN E.	79 22 16 47 43 32 34 57 54	3142 3003 3392	80 49 35 49 13 41 33 35 28	3133 2995 3386	82 17 4 50 44 0 32 12 56	3125 2988 3382	83 44 43 52 14 28 30 50 19	3128 2981 3377
28	SUN W. Antares E. Jupiter E. α Aquilæ E.	23 19 54 70 37 50 90 18 2 114 45 40	3043 2681 2646 3468	24 49 13 69 0 45 88 40 9 113 24 40	3026 2673 2637 3439	26 18 54 67 23 29 87 2 5 112 3 7	3011 2666 2628 3412	27 48 53 65 46 3 85 23 48 110 41 4	2997 2658 2621 3386
29	SUN W. Antares E. Jupiter E. α Aquilæ E.	35 23 1 57 36 25 77 9 36 103 44 3	2935 2623 2578 3281	36 54 36 55 58 1 75 30 11 102 19 29	2924 2617 2571 3264	38 26 24 54 19 29 73 50 36 100 54 35	2912 2611 2562 3247	39 58 27 52 40 49 72 10 49 99 29 22	2902 2605 2554 3232
30	SUN W. Antares E. Jupiter E. α Aquilæ E.	47 41 54 44 25 41 63 49 9 92 19 20	2854 2583 2515 3175	49 15 12 42 46 22 62 8 17 90 52 41	2844 2580 2507 3167	50 48 43 41 6 59 60 27 13 89 25 52	2835 2577 2500 3159	52 22 26 39 27 32 58 46 0 87 58 54	2826 2576 2492 3153
31	SUN W. Antares E. Jupiter E. α Aquilæ E.	60 13 52 31 10 19 50 17 10 80 42 35	2782 2586 2455 3138	61 48 43 29 31 5 48 34 53 79 15 11	2773 2594 2447 3138	63 23 46 27 52 2 46 52 25 77 47 48	2766 2606 2440 3139	64 58 59 26 13 15 45 9 47 76 20 26	2757 2621 2433 3142

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
17	Venus E.	53 2 37	3375	51 39 52	3386	50 17 19	3398	48 55 0	3408
	Sun E.	95 2 38	3316	93 38 45	3328	92 15 6	3338	90 51 39	3349
18	Fomalhaut W.	88 44 13	3216	90 10 3	3222	91 35 46	3230	93 1 20	3236
	α Pegasi W.	72 35 47	3463	73 56 52	3463	75 17 58	3463	76 39 3	3464
	α Arietis W.	29 9 39	3671	30 26 57	3623	31 45 7	3581	33 4 3	3545
	Venus E.	42 6 14	3455	40 45 0	3463	39 23 55	3470	38 2 57	3478
	Sun E.	83 57 13	3393	82 34 49	3401	81 12 34	3408	79 50 27	3415
19	Fomalhaut W.	100 7 26	3265	101 32 19	3269	102 57 7	3275	104 21 48	3279
	α Pegasi W.	83 24 16	3469	84 45 15	3469	86 6 14	3471	87 27 11	3472
	α Arietis W.	39 47 13	3419	41 9 8	3401	42 31 24	3386	43 53 57	3371
	Venus E.	31 19 57	3506	29 59 39	3509	28 39 25	3514	27 19 16	3517
	Sun E.	73 1 29	3440	71 39 58	3443	70 18 30	3446	68 57 6	3449
20	Fomalhaut W.	111 23 52	3303	112 48 0	3306	114 12 4	3312	115 36 2	3317
	α Pegasi W.	94 11 37	3479	95 32 25	3480	96 53 12	3481	98 13 57	3483
	α Arietis W.	50 50 32	3312	52 14 30	3302	53 38 39	3292	55 3 0	3283
	Sun E.	62 10 39	3455	60 49 25	3454	59 28 10	3454	58 6 55	3454
21	α Pegasi W.	104 57 10	3495	106 17 40	3497	107 38 8	3501	108 58 31	3505
	α Arietis W.	62 7 18	3241	63 32 39	3232	64 58 10	3224	66 23 51	3215
	Aldebaran W.	29 52 5	3076	31 20 44	3071	32 49 29	3065	34 18 21	3060
	Sun E.	51 20 16	3443	49 58 48	3441	48 37 18	3437	47 15 43	3433
22	α Pegasi W.	115 39 12	3533	116 59 0	3540	118 18 40	3548	119 38 11	3556
	α Arietis W.	73 34 40	3175	75 1 19	3167	76 28 8	3158	77 55 7	3150
	Aldebaran W.	41 44 23	3030	43 13 58	3024	44 43 41	3018	46 13 32	3010
	Sun E.	40 26 42	3412	39 4 39	3406	37 42 29	3402	36 20 15	3396
23	α Arietis W.	85 12 31	3109	86 40 30	3101	88 8 39	3092	89 36 58	3083
	Aldebaran W.	53 45 5	2973	55 15 52	2965	56 46 49	2956	58 17 57	2947
	Sun E.	29 27 36	3373	28 4 49	3369	26 41 57	3366	25 19 2	3364
28	Sun W.	29 19 10	2983	30 49 44	2970	32 20 34	2958	33 51 40	2946
	Antares E.	64 8 27	2651	62 30 41	2643	60 52 45	2636	59 14 39	2630
	Jupiter E.	83 45 21	2612	82 6 42	2603	80 27 51	2595	78 48 49	2587
	α Aquilæ E.	109 18 31	3362	107 55 31	3339	106 32 5	3319	105 8 15	3300
29	Sun W.	41 30 43	2892	43 3 12	2883	44 35 53	2873	46 8 47	2862
	Antares E.	51 2 1	2600	49 23 6	2595	47 44 4	2590	46 4 55	2586
	Jupiter E.	70 30 51	2546	68 50 42	2538	67 10 22	2530	65 29 51	2522
	α Aquilæ E.	98 3 51	3219	96 38 4	3207	95 12 3	3195	93 45 48	3184
30	Sun W.	53 56 20	2817	55 30 26	2808	57 4 43	2799	58 39 12	2791
	Antares E.	37 48 4	2574	36 8 34	2576	34 29 6	2577	32 49 40	2581
	Jupiter E.	57 4 35	2485	55 23 0	2477	53 41 14	2470	51 59 17	2462
	α Aquilæ E.	86 31 48	3148	85 4 36	3143	83 37 19	3140	82 9 58	3138
31	Sun W.	66 34 23	2748	68 9 59	2741	69 45 45	2733	71 21 41	2724
	Antares E.	24 34 48	2641	22 56 48	2668	21 19 25	2703	19 42 49	2751
	Jupiter E.	43 26 59	2425	41 44 0	2418	40 0 51	2411	38 17 32	2403
	α Aquilæ E.	74 53 8	3147	73 25 55	3153	71 58 50	3160	70 31 53	3169

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Sun.	1	10 43 8.15	9.067	N. 8 7 35.3	54.61	1 4.38	0 13.32	0.787
Mon.	2	10 46 45.61	9.055	7 45 40.9	54.92	1 4.34	0 32.37	0.800
Tues.	3	10 50 22.77	9.043	7 23 39.0	55.23	1 4.30	0 51.70	0.811
Wed.	4	10 53 59.66	9.032	7 1 30.0	55.51	1 4.27	1 11.31	0.822
Thur.	5	10 57 36.30	9.022	6 39 14.3	55.79	1 4.24	1 31.17	0.832
Frid.	6	11 1 12.70	9.012	6 16 52.1	56.05	1 4.20	1 51.27	0.842
Sat.	7	11 4 48.88	9.004	5 54 23.8	56.30	1 4.17	2 11.59	0.850
Sun.	8	11 8 24.87	8.996	5 31 49.7	56.54	1 4.14	2 32.09	0.858
Mon.	9	11 12 0.69	8.989	5 9 10.1	56.76	1 4.12	2 52.77	0.865
Tues.	10	11 15 36.36	8.984	4 46 25.2	56.97	1 4.10	3 13.59	0.870
Wed.	11	11 19 11.91	8.979	4 23 35.4	57.17	1 4.08	3 34.54	0.875
Thur.	12	11 22 47.37	8.976	4 0 41.0	57.36	1 4.07	3 55.58	0.878
Frid.	13	11 26 22.75	8.973	3 37 42.3	57.53	1 4.06	4 16.69	0.881
Sat.	14	11 29 58.09	8.972	3 14 39.6	57.69	1 4.05	4 37.85	0.882
Sun.	15	11 33 33.39	8.971	2 51 33.2	57.84	1 4.05	4 59.04	0.883
Mon.	16	11 37 8.68	8.971	2 28 23.4	57.97	1 4.04	5 20.25	0.883
Tues.	17	11 40 43.98	8.971	2 5 10.5	58.09	1 4.04	5 41.44	0.882
Wed.	18	11 44 19.31	8.973	1 41 54.9	58.20	1 4.05	6 2.60	0.881
Thur.	19	11 47 54.69	8.976	1 18 37.0	58.29	1 4.06	6 23.72	0.879
Frid.	20	11 51 30.14	8.979	0 55 17.0	58.37	1 4.07	6 44.77	0.875
Sat.	21	11 55 5.67	8.983	0 31 55.4	58.43	1 4.08	7 5.73	0.871
Sun.	22	11 58 41.30	8.987	N. 0 8 32.4	58.48	1 4.09	7 26.59	0.867
Mon.	23	12 2 17.06	8.993	S. 0 14 51.6	58.51	1 4.11	7 47.34	0.861
Tues.	24	12 5 52.95	8.999	0 38 16.2	58.53	1 4.13	8 7.94	0.855
Wed.	25	12 9 29.00	9.006	1 1 41.0	58.53	1 4.15	8 28.38	0.848
Thur.	26	12 13 5.22	9.013	1 25 5.8	58.52	1 4.18	8 48.66	0.841
Frid.	27	12 16 41.64	9.022	1 48 30.1	58.50	1 4.21	9 8.74	0.832
Sat.	28	12 20 18.27	9.031	2 11 53.6	58.45	1 4.24	9 28.61	0.823
Sun.	29	12 23 55.12	9.041	2 35 15.9	58.40	1 4.28	9 48.26	0.814
Mon.	30	12 27 32.22	9.051	2 58 36.6	58.32	1 4.32	10 7.66	0.803
Tues.	31	12 31 9.58	9.063	S. 3 21 55.4	58.23	1 4.37	10 26.80	0.792

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
<i>Sun.</i>	1	^h 10 ^m 43 ^s 8 ^{.18}	[°] N. 8 ['] 7 35 ^{.1}	['] 15 53 ^{.6}	^m 0 13 ^{.33}	^h 10 43 21 ^{.51}
<i>Mon.</i>	2	10 46 45 ^{.69}	7 45 40 ^{.4}	15 53 ^{.8}	0 32 ^{.38}	10 47 18 ^{.06}
<i>Tues.</i>	3	10 50 22 ^{.90}	7 23 38 ^{.2}	15 54 ^{.1}	0 51 ^{.72}	10 51 14 ^{.62}
<i>Wed.</i>	4	10 53 59 ^{.84}	7 1 28 ^{.9}	15 54 ^{.3}	1 11 ^{.33}	10 55 11 ^{.17}
<i>Thur.</i>	5	10 57 36 ^{.53}	6 39 12 ^{.8}	15 54 ^{.6}	1 31 ^{.20}	10 59 7 ^{.72}
<i>Frid.</i>	6	11 1 12 ^{.98}	6 16 50 ^{.3}	15 54 ^{.8}	1 51 ^{.30}	11 3 4 ^{.27}
<i>Sat.</i>	7	11 4 49 ^{.21}	5 54 21 ^{.7}	15 55 ^{.0}	2 11 ^{.62}	11 7 0 ^{.83}
<i>Sun.</i>	8	11 8 25 ^{.25}	5 31 47 ^{.3}	15 55 ^{.3}	2 32 ^{.13}	11 10 57 ^{.38}
<i>Mon.</i>	9	11 12 1 ^{.12}	5 9 7 ^{.3}	15 55 ^{.6}	2 52 ^{.81}	11 14 53 ^{.93}
<i>Tues.</i>	10	11 15 36 ^{.84}	4 46 22 ^{.1}	15 55 ^{.8}	3 13 ^{.64}	11 18 50 ^{.49}
<i>Wed.</i>	11	11 19 12 ^{.45}	4 23 32 ^{.0}	15 56 ^{.1}	3 34 ^{.59}	11 22 47 ^{.04}
<i>Thur.</i>	12	11 22 47 ^{.96}	4 0 37 ^{.3}	15 56 ^{.3}	3 55 ^{.63}	11 26 43 ^{.59}
<i>Frid.</i>	13	11 26 23 ^{.40}	3 37 38 ^{.2}	15 56 ^{.6}	4 16 ^{.75}	11 30 40 ^{.14}
<i>Sat.</i>	14	11 29 58 ^{.78}	3 14 35 ^{.1}	15 56 ^{.8}	4 37 ^{.92}	11 34 36 ^{.70}
<i>Sun.</i>	15	11 33 34 ^{.13}	2 51 28 ^{.4}	15 57 ^{.1}	4 59 ^{.12}	11 38 33 ^{.25}
<i>Mon.</i>	16	11 37 9 ^{.48}	2 28 18 ^{.2}	15 57 ^{.3}	5 20 ^{.32}	11 42 29 ^{.80}
<i>Tues.</i>	17	11 40 44 ^{.83}	2 5 5 ^{.0}	15 57 ^{.6}	5 41 ^{.52}	11 46 26 ^{.36}
<i>Wed.</i>	18	11 44 20 ^{.22}	1 41 49 ^{.1}	15 57 ^{.8}	6 2 ^{.69}	11 50 22 ^{.91}
<i>Thur.</i>	19	11 47 55 ^{.65}	1 18 30 ^{.8}	15 58 ^{.1}	6 23 ^{.81}	11 54 19 ^{.46}
<i>Frid.</i>	20	11 51 31 ^{.15}	0 55 10 ^{.5}	15 58 ^{.4}	6 44 ^{.87}	11 58 16 ^{.01}
<i>Sat.</i>	21	11 55 6 ^{.73}	0 31 48 ^{.5}	15 58 ^{.6}	7 5 ^{.83}	12 2 12 ^{.57}
<i>Sun.</i>	22	11 58 42 ^{.42}	N. 0 8 25 ^{.1}	15 58 ^{.9}	7 26 ^{.70}	12 6 9 ^{.12}
<i>Mon.</i>	23	12 2 18 ^{.22}	S. 0 14 59 ^{.2}	15 59 ^{.2}	7 47 ^{.45}	12 10 5 ^{.67}
<i>Tues.</i>	24	12 5 54 ^{.17}	0 38 24 ^{.1}	15 59 ^{.4}	8 8 ^{.05}	12 14 2 ^{.22}
<i>Wed.</i>	25	12 9 30 ^{.27}	1 1 49 ^{.3}	15 59 ^{.7}	8 28 ^{.50}	12 17 58 ^{.78}
<i>Thur.</i>	26	12 13 6 ^{.55}	1 25 14 ^{.4}	16 0 ^{.0}	8 48 ^{.78}	12 21 55 ^{.33}
<i>Frid.</i>	27	12 16 43 ^{.02}	1 48 39 ^{.1}	16 0 ^{.3}	9 8 ^{.87}	12 25 51 ^{.88}
<i>Sat.</i>	28	12 20 19 ^{.69}	2 12 2 ^{.9}	16 0 ^{.5}	9 28 ^{.74}	12 29 48 ^{.43}
<i>Sun.</i>	29	12 23 56 ^{.60}	2 35 25 ^{.5}	16 0 ^{.8}	9 48 ^{.39}	12 33 44 ^{.99}
<i>Mon.</i>	30	12 27 33 ^{.75}	2 58 46 ^{.5}	16 1 ^{.1}	10 7 ^{.79}	12 37 41 ^{.54}
<i>Tues.</i>	31	12 31 11 ^{.16}	S. 3 22 5 ^{.5}	16 1 ^{.4}	10 26 ^{.93}	12 41 38 ^{.09}

* The Semidiameter for *Apparent Noon* may be assumed the same as that for *Mean Noon*.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	159 11 46.9	N. 0° 17'	0.0037347	13 14 27.98	15 59.2	16 2.5	58 34.1	58 46.5
2	160 9 55.4	N. 0° 06'	0.0036257	13 10 32.07	16 5.7	16 8.7	58 58.2	59 9.1
3	161 8 5.3	S. 0° 07'	0.0035155	13 6 36.17	16 11.4	16 13.8	59 19.0	59 27.7
4	162 6 16.6	0° 20'	0.0034043	13 2 40.26	16 15.8	16 17.3	59 35.0	59 40.5
5	163 4 29.4	0° 33'	0.0032924	12 58 44.35	16 18.3	16 18.7	59 44.1	59 45.6
6	164 2 43.6	0° 46'	0.0031798	12 54 48.45	16 18.4	16 17.4	59 44.6	59 41.1
7	165 0 59.4	0° 58'	0.0030668	12 50 52.54	16 15.8	16 13.3	59 34.9	59 26.0
8	165 59 16.8	0° 67'	0.0029534	12 46 56.63	16 10.2	16 6.3	59 14.4	59 0.3
9	166 57 35.9	0° 74'	0.0028398	12 43 0.73	16 1.9	15 56.8	58 44.0	58 25.6
10	167 55 56.8	0° 77'	0.0027260	12 39 4.82	15 51.4	15 45.6	58 5.6	57 44.4
11	168 54 19.6	0° 77'	0.0026117	12 35 8.91	15 39.6	15 33.5	57 22.4	57 0.1
12	169 52 44.4	0° 75'	0.0024973	12 31 13.00	15 27.4	15 21.5	56 37.8	56 16.1
13	170 51 11.3	0° 69'	0.0023825	12 27 17.10	15 15.8	15 10.5	55 55.3	55 35.7
14	171 49 40.3	0° 61'	0.0022674	12 23 21.19	15 5.6	15 1.2	55 17.8	55 1.7
15	172 48 11.5	0° 51'	0.0021518	12 19 25.28	14 57.4	14 54.2	54 47.8	54 36.1
16	173 46 44.9	0° 41'	0.0020357	12 15 29.38	14 51.7	14 49.9	54 26.9	54 20.2
17	174 45 20.5	0° 30'	0.0019191	12 11 33.47	14 48.8	14 48.3	54 16.1	54 14.6
18	175 43 58.3	0° 19'	0.0018018	12 7 37.56	14 48.6	14 49.6	54 15.7	54 19.3
19	176 42 38.3	S. 0° 08'	0.0016837	12 3 41.66	14 51.3	14 53.6	54 25.3	54 33.7
20	177 41 20.5	N. 0° 03'	0.0015648	11 59 45.75	14 56.4	14 59.8	54 44.2	54 56.6
21	178 40 4.9	0° 14'	0.0014451	11 55 49.84	15 3.7	15 7.9	55 10.7	55 26.3
22	179 38 51.4	0° 23'	0.0013245	11 51 53.94	15 12.5	15 17.3	55 43.1	56 0.7
23	180 37 39.9	0° 29'	0.0012030	11 47 58.03	15 22.3	15 27.3	56 18.9	56 37.3
24	181 36 30.6	0° 33'	0.0010804	11 44 2.12	15 32.3	15 37.2	56 55.7	57 13.6
25	182 35 23.3	0° 35'	0.0009569	11 40 6.22	15 41.9	15 46.4	57 30.9	57 47.3
26	183 34 17.9	0° 33'	0.0008324	11 36 10.31	15 50.5	15 54.3	58 2.5	58 16.4
27	184 33 14.5	0° 28'	0.0007070	11 32 14.40	15 57.7	16 0.7	58 28.9	58 39.9
28	185 32 13.1	0° 21'	0.0005808	11 28 18.50	16 3.3	16 5.5	58 49.3	58 57.2
29	186 31 13.5	N. 0° 11'	0.0004538	11 24 22.59	16 7.2	16 8.5	59 3.5	59 8.4
30	187 30 15.7	S. 0° 02'	0.0003263	11 20 26.68	16 9.5	16 10.1	59 12.0	59 14.3
31	188 29 19.7	S. 0° 15'	0.0001984	11 16 30.78	16 10.4	16 10.4	59 15.3	59 15.1

MEAN TIME.

THE MOON'S

Day of the Month.

Day of the	Longitude.			Latitude.			Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.		
	^o ['] ["]	^o ['] ["]	^o ['] ["]	^o ['] ["]	^d	^h ^m	^h ^m		
1	232 7 34.7	239 4 6.2	N. 3 47 49.6	N. 3 21 28.8	5.9	4 49.7	17 16.6		
2	246 2 57.1	253 4 3.7	2 51 58.7	2 19 43.2	6.9	5 44.3	18 12.8		
3	260 7 20.8	267 12 42.2	1 45 9.9	N. 1 8 49.6	7.9	6 42.1	19 12.0		
4	274 19 59.1	281 28 59.0	N. 0 31 15.7	S. 0 6 55.3	8.9	7 42.3	20 12.9		
5	288 39 25.3	295 50 57.0	S. 0 45 5.8	1 22 36.7	9.9	8 43.4	21 13.6		
6	303 3 7.5	310 15 26.1	1 58 49.4	2 33 6.2	10.9	9 43.4	22 12.4		
7	317 27 17.1	324 38 1.1	3 4 51.4	3 33 33.2	11.9	10 40.7	23 8.2		
8	331 46 56.9	338 53 22.1	3 58 43.8	4 20 0.7	12.9	11 34.8	* *		
9	345 56 35.2	352 55 57.7	4 37 7.6	4 49 53.8	13.9	12 25.7	0 0.6		
10	359 50 54.7	6 40 57.7	4 58 14.7	5 2 11.6	14.9	13 14.0	0 50.1		
11	13 25 44.4	20 4 59.9	5 1 50.5	4 57 22.0	15.9	14 0.6	1 37.5		
12	26 38 37.4	33 6 37.7	4 48 59.9	4 37 0.4	16.9	14 46.3	2 23.5		
13	39 29 9.0	45 46 26.6	4 21 41.7	4 3 22.8	17.9	15 31.9	3 9.1		
14	51 58 51.7	58 6 51.1	3 42 23.2	3 19 2.2	18.9	16 18.0	3 54.9		
15	64 10 55.6	70 11 40.2	2 53 39.0	2 26 32.5	19.9	17 4.9	4 41.3		
16	76 9 42.4	82 5 41.6	1 58 0.8	1 28 20.9	20.9	17 52.9	5 28.8		
17	88 0 19.0	93 54 15.9	S. 0 57 50.5	S. 0 26 46.5	21.9	18 41.8	6 17.3		
18	99 48 13.6	105 42 53.4	N. 0 4 34.2	N. 0 35 54.7	22.9	19 31.1	7 6.4		
19	111 38 54.8	117 36 55.4	1 6 57.6	1 37 25.3	23.9	20 20.4	7 55.8		
20	123 37 30.7	129 41 12.8	2 6 59.1	2 35 20.0	24.9	21 9.1	8 44.8		
21	135 48 30.3	141 59 47.2	3 2 8.2	3 27 3.2	25.9	21 57.1	9 33.2		
22	148 15 22.8	154 35 31.2	3 49 44.2	4 9 50.4	26.9	22 44.3	10 20.8		
23	161 0 20.3	167 29 52.2	4 27 1.0	4 40 56.3	27.9	23 31.0	11 7.7		
24	174 4 3.1	180 42 43.1	4 51 18.3	4 57 50.7	28.9	* *	11 54.3		
25	187 25 36.8	194 12 24.4	5 0 20.6	4 58 38.3	0.4	0 17.8	12 41.4		
26	201 2 42.1	207 56 3.8	4 52 38.7	4 42 21.0	1.4	1 5.3	13 29.6		
27	214 52 1.6	221 50 8.0	4 27 49.5	4 9 13.3	2.4	1 54.4	14 19.7		
28	228 49 56.4	235 51 2.3	3 46 47.1	3 20 49.6	3.4	2 45.8	15 12.6		
29	242 53 3.6	249 55 42.4	2 51 43.7	2 19 56.1	4.4	3 40.1	16 8.3		
30	256 58 43.5	264 1 55.2	1 45 56.7	N. 1 10 17.8	5.4	4 37.2	17 6.6		
31	271 5 8.6	278 8 16.6	N. 0 33 32.8	S. 0 3 43.3	6.4	5 36.5	18 6.5		

The Moon's Longitude and Latitude are from HANSEN's Tables *direct*; the Right Ascension and Declination contain NEWCOMB's corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 1.					TUESDAY 3.				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	15 22 51.32	22.668	S. 14 38 14.6	107.10	0	17 17 32.89	25.073	S. 21 20 11.7	55.45
1	15 25 7.47	22.718	14 48 54.9	106.33	1	17 20 3.46	25.117	21 25 40.3	54.08
2	15 27 23.93	22.768	14 59 30.6	105.55	2	17 22 34.29	25.159	21 31 0.6	52.69
3	15 29 40.68	22.817	15 10 1.5	104.75	3	17 25 5.37	25.200	21 36 12.6	51.30
4	15 31 57.73	22.868	15 20 27.6	103.94	4	17 27 36.69	25.241	21 41 16.2	49.89
5	15 34 15.09	22.918	15 30 48.8	103.13	5	17 30 8.26	25.281	21 46 11.3	48.48
6	15 36 32.75	22.969	15 41 5.1	102.29	6	17 32 40.06	25.320	21 50 57.9	47.05
7	15 38 50.72	23.021	15 51 16.3	101.44	7	17 35 12.10	25.358	21 55 35.9	45.62
8	15 41 9.00	23.072	16 1 22.4	100.58	8	17 37 44.36	25.396	22 0 5.3	44.18
9	15 43 27.58	23.123	16 11 23.2	99.70	9	17 40 16.85	25.433	22 4 26.0	42.72
10	15 45 46.47	23.174	16 21 18.8	98.82	10	17 42 49.56	25.469	22 8 37.9	41.26
11	15 48 5.67	23.227	16 31 9.0	97.92	11	17 45 22.48	25.504	22 12 41.1	39.79
12	15 50 25.19	23.279	16 40 53.8	97.00	12	17 47 55.61	25.539	22 16 35.4	38.31
13	15 52 45.02	23.330	16 50 33.0	96.08	13	17 50 28.95	25.573	22 20 20.8	36.83
14	15 55 5.15	23.382	17 0 6.7	95.13	14	17 53 2.48	25.604	22 23 57.3	35.33
15	15 57 25.60	23.435	17 9 34.6	94.18	15	17 55 36.20	25.636	22 27 24.8	33.83
16	15 59 46.37	23.488	17 18 56.8	93.21	16	17 58 10.11	25.667	22 30 43.3	32.32
17	16 2 7.45	23.539	17 28 13.1	92.23	17	18 0 44.20	25.697	22 33 52.6	30.79
18	16 4 28.84	23.592	17 37 23.5	91.23	18	18 3 18.47	25.726	22 36 52.8	29.28
19	16 6 50.55	23.644	17 46 27.8	90.23	19	18 5 52.91	25.753	22 39 43.9	27.75
20	16 9 12.57	23.697	17 55 26.1	89.20	20	18 8 27.51	25.779	22 42 25.8	26.22
21	16 11 34.91	23.749	18 4 18.2	88.17	21	18 11 2.26	25.804	22 44 58.5	24.67
22	16 13 57.56	23.802	18 13 4.1	87.13	22	18 13 37.16	25.829	22 47 21.8	23.12
23	16 16 20.53	23.853	S. 18 21 43.7	86.06	23	18 16 12.21	25.853	S. 22 49 35.9	21.56
MONDAY 2.					WEDNESDAY 4.				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	16 18 43.80	23.905	S. 18 30 16.8	84.98	0	18 18 47.40	25.876	S. 22 51 40.5	19.99
1	16 21 7.39	23.958	18 38 43.4	83.89	1	18 21 22.72	25.897	22 53 35.8	18.43
2	16 23 31.29	24.010	18 47 3.5	82.80	2	18 23 58.16	25.917	22 55 21.7	16.87
3	16 25 55.51	24.062	18 55 17.0	81.68	3	18 26 33.72	25.936	22 56 58.2	15.28
4	16 28 20.03	24.113	19 3 23.7	80.55	4	18 29 9.39	25.953	22 58 25.1	13.70
5	16 30 44.86	24.164	19 11 23.6	79.42	5	18 31 45.16	25.970	22 59 42.6	12.13
6	16 33 10.00	24.216	19 19 16.7	78.27	6	18 34 21.03	25.986	23 0 50.6	10.54
7	16 35 35.45	24.267	19 27 2.8	77.09	7	18 36 56.99	26.000	23 1 49.1	8.95
8	16 38 1.20	24.317	19 34 41.8	75.92	8	18 39 33.03	26.013	23 2 38.0	7.35
9	16 40 27.25	24.368	19 42 13.8	74.73	9	18 42 9.15	26.025	23 3 17.3	5.76
10	16 42 53.61	24.418	19 49 38.6	73.53	10	18 44 45.33	26.036	23 3 47.1	4.17
11	16 45 20.26	24.467	19 56 56.1	72.31	11	18 47 21.58	26.046	23 4 7.3	2.56
12	16 47 47.21	24.517	20 4 6.3	71.08	12	18 49 57.88	26.054	23 4 17.8	0.95
13	16 50 14.46	24.566	20 11 9.1	69.85	13	18 52 34.23	26.062	23 4 18.7	0.65
14	16 52 42.00	24.613	20 18 4.5	68.60	14	18 55 10.62	26.068	23 4 10.0	2.25
15	16 55 9.82	24.662	20 24 52.3	67.33	15	18 57 47.04	26.072	23 3 51.7	3.86
16	16 57 37.94	24.711	20 31 32.5	66.06	16	19 0 23.48	26.076	23 3 23.7	5.47
17	17 0 6.35	24.758	20 38 5.0	64.78	17	19 2 59.95	26.078	23 2 46.1	7.07
18	17 2 35.03	24.803	20 44 29.8	63.48	18	19 5 36.42	26.079	23 1 58.9	8.68
19	17 5 3.99	24.850	20 50 46.7	62.17	19	19 8 12.90	26.079	23 1 2.0	10.29
20	17 7 33.23	24.896	20 56 55.8	60.84	20	19 10 49.37	26.078	22 59 55.4	11.90
21	17 10 2.74	24.942	21 2 56.8	59.51	21	19 13 25.83	26.075	22 58 39.2	13.50
22	17 12 32.53	24.987	21 8 49.9	58.18	22	19 16 2.27	26.071	22 57 13.4	15.10
23	17 15 2.58	25.030	21 14 34.9	56.82	23	19 18 38.68	26.067	22 55 38.0	16.70
24	17 17 32.89	25.073	S. 21 20 11.7	55.45	24	19 21 15.07	26.061	S. 22 53 53.0	18.30

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^s .	Declination.	Var. in 10 ^s .	Hour.	Right Ascension.	Var. in 10 ^s .	Declination.	Var. in 10 ^s .
THURSDAY 5.					SATURDAY 7.				
0	19 21 15.07	26.061	S. 22 53 53.0	18.30	0	21 23 33.01	24.554	S. 18 32 43.6	87.00
1	19 23 51.41	26.053	22 51 58.4	19.90	1	21 26 0.19	24.506	18 23 58.1	88.16
2	19 26 27.70	26.044	22 49 54.2	21.50	2	21 28 27.08	24.457	18 15 5.7	89.30
3	19 29 3.94	26.035	22 47 40.4	23.09	3	21 30 53.67	24.406	18 6 6.5	90.43
4	19 31 40.12	26.023	22 45 17.1	24.68	4	21 33 19.95	24.356	17 57 0.5	91.55
5	19 34 16.22	26.011	22 42 44.3	26.27	5	21 35 45.94	24.306	17 47 47.9	92.65
6	19 36 52.25	25.998	22 40 1.9	27.85	6	21 38 11.62	24.255	17 38 28.7	93.74
7	19 39 28.19	25.983	22 37 10.1	29.42	7	21 40 37.00	24.204	17 29 3.0	94.83
8	19 42 4.04	25.967	22 34 8.9	30.99	8	21 43 2.07	24.153	17 19 30.8	95.88
9	19 44 39.79	25.950	22 30 58.2	32.57	9	21 45 26.83	24.101	17 9 52.4	96.93
10	19 47 15.44	25.933	22 27 38.1	34.13	10	21 47 51.28	24.049	17 0 7.7	97.96
11	19 49 50.98	25.913	22 24 8.7	35.68	11	21 50 15.42	23.997	16 50 16.9	98.98
12	19 52 26.39	25.892	22 20 30.0	37.23	12	21 52 39.24	23.945	16 40 20.0	99.98
13	19 55 1.68	25.871	22 16 42.0	38.78	13	21 55 2.76	23.893	16 30 17.1	100.97
14	19 57 36.84	25.848	22 12 44.7	40.33	14	21 57 25.96	23.841	16 20 8.4	101.93
15	20 0 11.86	25.824	22 8 38.1	41.86	15	21 59 48.85	23.788	16 9 54.0	102.88
16	20 2 46.73	25.799	22 4 22.4	43.38	16	22 2 11.42	23.736	15 59 33.8	103.83
17	20 5 21.45	25.773	21 59 57.6	44.89	17	22 4 33.68	23.683	15 49 8.1	104.74
18	20 7 56.01	25.747	21 55 23.7	46.41	18	22 6 55.62	23.631	15 38 36.9	105.64
19	20 10 30.41	25.719	21 50 40.7	47.91	19	22 9 17.25	23.578	15 28 0.4	106.53
20	20 13 4.64	25.691	21 45 48.8	49.40	20	22 11 38.56	23.526	15 17 18.5	107.41
21	20 15 38.70	25.661	21 40 47.9	50.89	21	22 13 59.56	23.473	15 6 31.5	108.27
22	20 18 12.57	25.629	21 35 38.1	52.38	22	22 16 20.24	23.421	14 55 39.3	109.12
23	20 20 46.25	25.598	S. 21 30 19.4	53.84	23	22 18 40.61	23.368	S. 14 44 42.1	109.94
FRIDAY 6.					SUNDAY 8.				
0	20 23 19.75	25.566	S. 21 24 52.0	55.29	0	22 21 0.66	23.316	S. 14 33 40.0	110.76
1	20 25 53.04	25.532	21 19 15.9	56.74	1	22 23 20.40	23.263	14 22 33.0	111.57
2	20 28 26.13	25.498	21 13 31.1	58.19	2	22 25 39.82	23.211	14 11 21.2	112.35
3	20 30 59.01	25.463	21 7 37.6	59.62	3	22 27 58.93	23.159	14 0 4.8	113.12
4	20 33 31.68	25.426	21 1 35.6	61.03	4	22 30 17.73	23.108	13 48 43.8	113.87
5	20 36 4.12	25.388	20 55 25.2	62.44	5	22 32 36.22	23.056	13 37 18.4	114.60
6	20 38 36.34	25.351	20 49 6.3	63.85	6	22 34 54.40	23.004	13 25 48.6	115.33
7	20 41 8.33	25.313	20 42 39.0	65.24	7	22 37 12.27	22.953	13 14 14.5	116.03
8	20 43 40.09	25.273	20 36 3.4	66.62	8	22 39 29.83	22.901	13 2 36.2	116.72
9	20 46 11.61	25.233	20 29 19.6	67.98	9	22 41 47.08	22.849	12 50 53.9	117.39
10	20 48 42.88	25.192	20 22 27.6	69.34	10	22 44 4.02	22.798	12 39 7.5	118.06
11	20 51 13.91	25.150	20 15 27.5	70.68	11	22 46 20.66	22.748	12 27 17.2	118.70
12	20 53 44.68	25.108	20 8 19.4	72.01	12	22 48 37.00	22.698	12 15 23.1	119.33
13	20 56 15.20	25.065	20 1 3.4	73.33	13	22 50 53.04	22.648	12 3 25.3	119.93
14	20 58 45.46	25.022	19 53 39.4	74.64	14	22 53 8.78	22.598	11 51 23.9	120.53
15	21 1 15.46	24.978	19 46 7.7	75.93	15	22 55 24.22	22.548	11 39 19.0	121.11
16	21 3 45.19	24.933	19 38 28.2	77.22	16	22 57 39.36	22.499	11 27 10.6	121.68
17	21 6 14.65	24.887	19 30 41.1	78.48	17	22 59 54.21	22.451	11 14 58.9	122.23
18	21 8 43.83	24.841	19 22 46.4	79.74	18	23 2 8.77	22.403	11 2 43.9	122.77
19	21 11 12.74	24.795	19 14 44.2	80.98	19	23 4 23.04	22.354	10 50 25.7	123.28
20	21 13 41.37	24.748	19 6 34.6	82.21	20	23 6 37.02	22.306	10 38 4.5	123.78
21	21 16 9.71	24.700	18 58 17.7	83.43	21	23 8 50.71	22.258	10 25 40.3	124.28
22	21 18 37.77	24.653	18 49 53.5	84.63	22	23 11 4.12	22.212	10 13 13.1	124.76
23	21 21 5.54	24.603	18 41 22.1	85.83	23	23 13 17.25	22.165	10 0 43.2	125.22
24	21 23 33.01	24.554	S. 18 32 43.6	87.00	24	23 15 30.10	22.118	S. 9 48 10.5	125.67

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 9.					WEDNESDAY 11.				
0	23 15 30 ¹⁰	22 ¹¹⁸	S. 9 48 10 ⁵	125 ⁶⁷	0	0 57 13 ⁰⁸	20 ⁴⁶⁴	N. 0 39 52 ⁴	131 ⁰⁹
1	23 17 42 ⁶⁷	22 ⁰⁷³	9 35 35 ²	126 ⁰⁹	1	0 59 15 ⁸⁰	20 ⁴⁴³	0 52 58 ⁴	130 ⁹¹
2	23 19 54 ⁹⁷	22 ⁰²⁸	9 22 57 ⁴	126 ⁵¹	2	1 1 18 ³⁹	20 ⁴²²	1 6 3 ³	130 ⁷²
3	23 22 7 ⁰⁰	21 ⁹⁸²	9 10 17 ¹	126 ⁹¹	3	1 3 20 ⁸⁶	20 ⁴⁰²	1 19 7 ⁰	130 ⁵¹
4	23 24 18 ⁷⁵	21 ⁹³⁷	8 57 34 ⁵	127 ²⁹	4	1 5 23 ²¹	20 ³⁸²	1 32 9 ⁴	130 ²⁹
5	23 26 30 ²⁴	21 ⁸⁹³	8 44 49 ⁶	127 ⁶⁷	5	1 7 25 ⁴⁴	20 ³⁶³	1 45 10 ⁵	130 ⁰⁷
6	23 28 41 ⁴⁶	21 ⁸⁴⁸	8 32 2 ⁵	128 ⁰³	6	1 9 27 ⁵⁶	20 ³⁴⁴	1 58 10 ³	129 ⁸⁴
7	23 30 52 ⁴²	21 ⁸⁰⁶	8 19 13 ³	128 ³⁸	7	1 11 29 ⁵⁷	20 ³²⁷	2 11 8 ⁶	129 ⁵⁹
8	23 33 3 ¹³	21 ⁷⁶³	8 6 22 ⁰	128 ⁷⁰	8	1 13 31 ⁴⁸	20 ³¹⁰	2 24 5 ⁴	129 ³⁴
9	23 35 13 ⁵⁷	21 ⁷¹⁹	7 53 28 ⁹	129 ⁰¹	9	1 15 33 ²⁹	20 ²⁹³	2 37 0 ⁷	129 ⁰⁸
10	23 37 23 ⁷⁶	21 ⁶⁷⁸	7 40 33 ⁹	129 ³²	10	1 17 34 ⁹⁹	20 ²⁷⁶	2 49 54 ⁴	128 ⁸¹
11	23 39 33 ⁷⁰	21 ⁶³⁶	7 27 37 ¹	129 ⁶¹	11	1 19 36 ⁶⁰	20 ²⁶¹	3 2 46 ⁴	128 ⁵²
12	23 41 43 ³⁹	21 ⁵⁹⁵	7 14 38 ⁶	129 ⁸⁸	12	1 21 38 ¹²	20 ²⁴⁶	3 15 36 ⁶	128 ²³
13	23 43 52 ⁸⁴	21 ⁵⁵⁴	7 1 38 ⁶	130 ¹³	13	1 23 39 ⁵⁵	20 ²³¹	3 28 25 ¹	127 ⁹³
14	23 46 2 ⁰⁴	21 ⁵¹⁴	6 48 37 ¹	130 ³⁸	14	1 25 40 ⁸⁹	20 ²¹⁶	3 41 11 ⁷	127 ⁶²
15	23 48 11 ⁰¹	21 ⁴⁷⁵	6 35 34 ¹	130 ⁶¹	15	1 27 42 ¹⁴	20 ²⁰³	3 53 56 ⁵	127 ³⁰
16	23 50 19 ⁷⁴	21 ⁴³⁵	6 22 29 ⁸	130 ⁸³	16	1 29 43 ³²	20 ¹⁹⁰	4 6 39 ³	126 ⁹⁶
17	23 52 28 ²³	21 ³⁹⁷	6 9 24 ²	131 ⁰³	17	1 31 44 ⁴²	20 ¹⁷⁸	4 19 20 ⁰	126 ⁶²
18	23 54 36 ⁵⁰	21 ³⁵⁸	5 56 17 ⁵	131 ²²	18	1 33 45 ⁴⁵	20 ¹⁶⁵	4 31 58 ⁷	126 ²⁸
19	23 56 44 ⁵³	21 ³²⁰	5 43 9 ⁶	131 ³⁹	19	1 35 46 ⁴⁰	20 ¹⁵³	4 44 35 ³	125 ⁹²
20	23 58 52 ³⁴	21 ²⁸⁴	5 30 0 ⁸	131 ⁵⁵	20	1 37 47 ²⁹	20 ¹⁴³	4 57 9 ⁷	125 ⁵⁵
21	0 0 59 ⁹⁴	21 ²⁴⁸	5 16 51 ⁰	131 ⁷¹	21	1 39 48 ¹¹	20 ¹³²	5 9 41 ⁹	125 ¹⁸
22	0 3 7 ³¹	21 ²¹⁰	5 3 40 ³	131 ⁸⁵	22	1 41 48 ⁸⁷	20 ¹²²	5 22 11 ⁸	124 ⁷⁹
23	0 5 14 ⁴⁶	21 ¹⁷⁴	S. 4 50 28 ⁸	131 ⁹⁷	23	1 43 49 ⁵⁷	20 ¹¹³	N. 5 34 39 ⁴	124 ⁴⁰
TUESDAY 10.					THURSDAY 12.				
0	0 7 21 ⁴⁰	21 ¹⁴⁰	S. 4 37 16 ⁷	132 ⁰⁸	0	1 45 50 ²²	20 ¹⁰⁴	N. 5 47 4 ⁶	124 ⁰⁰
1	0 9 28 ¹⁴	21 ¹⁰⁶	4 24 3 ⁹	132 ¹⁸	1	1 47 50 ⁸²	20 ⁰⁹⁵	5 59 27 ⁴	123 ⁵⁸
2	0 11 34 ⁶⁷	21 ⁰⁷²	4 10 50 ⁶	132 ²⁵	2	1 49 51 ³⁶	20 ⁰⁸⁷	6 11 47 ⁶	123 ¹⁶
3	0 13 41 ⁰⁰	21 ⁰³⁹	3 57 36 ⁹	132 ³³	3	1 51 51 ⁸⁶	20 ⁰⁸⁰	6 24 5 ³	122 ⁷⁴
4	0 15 47 ¹⁴	21 ⁰⁰⁶	3 44 22 ⁷	132 ³⁹	4	1 53 52 ³²	20 ⁰⁷³	6 36 20 ⁵	122 ³¹
5	0 17 53 ⁰⁷	20 ⁹⁷³	3 31 8 ²	132 ⁴³	5	1 55 52 ⁷⁴	20 ⁰⁶⁷	6 48 33 ⁰	121 ⁸⁶
6	0 19 58 ⁸¹	20 ⁹⁴²	3 17 53 ⁵	132 ⁴⁷	6	1 57 53 ¹²	20 ⁰⁶¹	7 0 42 ⁸	121 ⁴¹
7	0 22 4 ³⁷	20 ⁹¹¹	3 4 38 ⁶	132 ⁴⁹	7	1 59 53 ⁴⁷	20 ⁰⁵⁵	7 12 49 ⁹	120 ⁹⁶
8	0 24 9 ⁷⁴	20 ⁸⁸⁰	2 51 23 ⁶	132 ⁵¹	8	2 1 53 ⁷⁸	20 ⁰⁵⁰	7 24 54 ³	120 ⁴⁹
9	0 26 14 ⁹³	20 ⁸⁵⁰	2 38 8 ⁵	132 ⁵¹	9	2 3 54 ⁰⁷	20 ⁰⁴⁶	7 36 55 ⁸	120 ⁰¹
10	0 28 19 ⁹⁴	20 ⁸²⁰	2 24 53 ⁵	132 ⁴⁹	10	2 5 54 ³³	20 ⁰⁴²	7 48 54 ⁴	119 ⁵³
11	0 30 24 ⁷⁷	20 ⁷⁹⁰	2 11 38 ⁶	132 ⁴⁶	11	2 7 54 ⁵⁷	20 ⁰³⁸	8 0 50 ¹	119 ⁰³
12	0 32 29 ⁴²	20 ⁷⁶²	1 58 24 ⁰	132 ⁴²	12	2 9 54 ⁷⁹	20 ⁰³⁵	8 12 42 ⁸	118 ⁵⁴
13	0 34 33 ⁹¹	20 ⁷³⁴	1 45 9 ⁶	132 ³⁸	13	2 11 54 ⁹⁹	20 ⁰³³	8 24 32 ⁵	118 ⁰³
14	0 36 38 ²³	20 ⁷⁰⁷	1 31 55 ⁵	132 ³²	14	2 13 55 ¹⁸	20 ⁰³⁰	8 36 19 ¹	117 ⁵²
15	0 38 42 ³⁹	20 ⁶⁸⁰	1 18 41 ⁸	132 ²⁵	15	2 15 55 ³⁵	20 ⁰²⁸	8 48 2 ⁷	117 ⁰⁰
16	0 40 46 ³⁹	20 ⁶⁵⁴	1 5 28 ⁵	132 ¹⁷	16	2 17 55 ⁵¹	20 ⁰²⁷	8 59 43 ¹	116 ⁴⁷
17	0 42 50 ²⁴	20 ⁶²⁹	0 52 15 ⁸	132 ⁰⁷	17	2 19 55 ⁶⁷	20 ⁰²⁷	9 11 20 ³	115 ⁹³
18	0 44 53 ⁹⁴	20 ⁶⁰³	0 39 3 ⁷	131 ⁹⁶	18	2 21 55 ⁸³	20 ⁰²⁶	9 22 54 ²	115 ³⁸
19	0 46 57 ⁴⁸	20 ⁵⁷⁸	0 25 52 ³	131 ⁸⁴	19	2 23 55 ⁹⁸	20 ⁰²⁶	9 34 24 ⁸	114 ⁸³
20	0 49 0 ⁸⁸	20 ⁵⁵¹	S. 0 12 41 ⁶	131 ⁷¹	20	2 25 56 ¹⁴	20 ⁰²⁷	9 45 52 ²	114 ²⁸
21	0 51 4 ¹³	20 ⁵³⁴	N. 0 0 28 ²	131 ⁵⁷	21	2 27 56 ³⁰	20 ⁰²⁸	9 57 16 ¹	113 ⁷⁰
22	0 53 7 ²⁵	20 ⁵⁰⁸	0 13 37 ²	131 ⁴³	22	2 29 56 ⁴⁷	20 ⁰²⁸	10 8 36 ⁶	113 ¹³
23	0 55 10 ²³	20 ⁴⁸⁶	0 26 45 ³	131 ²⁷	23	2 31 56 ⁶⁴	20 ⁰³⁰	10 19 53 ⁷	112 ⁵⁶
24	0 57 13 ⁰⁸	20 ⁴⁶⁴	N. 0 39 52 ⁴	131 ⁰⁹	24	2 33 56 ⁸³	20 ⁰³³	N. 10 31 7 ³	111 ⁹⁷

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 13.					SUNDAY 15.				
0	h m s		° ' "		0	h m s		° ' "	
0	2 33 56.83	20.033	N.10 31 7.3	111.97	0	4 11 1.15	20.520	N.18 8 54.3	76.56
1	2 35 57.03	20.035	10 42 17.3	111.38	1	4 13 4.32	20.535	18 16 31.0	75.68
2	2 37 57.25	20.038	10 53 23.8	110.78	2	4 15 7.57	20.550	18 24 2.5	74.82
3	2 39 57.49	20.042	11 4 26.6	110.17	3	4 17 10.92	20.567	18 31 28.8	73.93
4	2 41 57.75	20.046	11 15 25.8	109.55	4	4 19 14.37	20.583	18 38 49.7	73.04
5	2 43 58.04	20.050	11 26 21.2	108.93	5	4 21 17.92	20.599	18 46 5.3	72.16
6	2 45 58.35	20.055	11 37 12.9	108.31	6	4 23 21.56	20.614	18 53 15.6	71.27
7	2 47 58.70	20.060	11 48 0.9	107.68	7	4 25 25.29	20.630	19 0 20.5	70.37
8	2 49 59.07	20.064	11 58 45.0	107.03	8	4 27 29.12	20.647	19 7 20.0	69.47
9	2 51 59.47	20.070	12 9 25.2	106.38	9	4 29 33.05	20.663	19 14 14.1	68.56
10	2 53 59.91	20.077	12 20 1.5	105.73	10	4 31 37.07	20.679	19 21 2.7	67.64
11	2 56 0.39	20.083	12 30 33.9	105.07	11	4 33 41.20	20.696	19 27 45.8	66.73
12	2 58 0.91	20.090	12 41 2.3	104.40	12	4 35 45.42	20.712	19 34 23.4	65.81
13	3 0 1.47	20.097	12 51 26.7	103.73	13	4 37 49.74	20.728	19 40 55.5	64.88
14	3 2 2.07	20.104	13 1 47.0	103.04	14	4 39 54.16	20.745	19 47 22.0	63.95
15	3 4 2.72	20.113	13 12 3.2	102.36	15	4 41 58.68	20.762	19 53 42.9	63.02
16	3 6 3.42	20.121	13 22 15.3	101.68	16	4 44 3.30	20.778	19 59 58.2	62.08
17	3 8 4.17	20.129	13 32 23.3	100.98	17	4 46 8.01	20.793	20 6 7.8	61.13
18	3 10 4.97	20.138	13 42 27.0	100.27	18	4 48 12.82	20.810	20 12 11.8	60.19
19	3 12 5.82	20.147	13 52 26.5	99.56	19	4 50 17.73	20.827	20 18 10.1	59.24
20	3 14 6.73	20.156	14 2 21.7	98.84	20	4 52 22.74	20.843	20 24 2.7	58.29
21	3 16 7.69	20.166	14 12 12.6	98.12	21	4 54 27.85	20.859	20 29 49.6	57.33
22	3 18 8.72	20.176	14 21 59.1	97.39	22	4 56 33.05	20.875	20 35 30.7	56.37
23	3 20 9.80	20.186	N.14 31 41.3	96.67	23	4 58 38.35	20.892	N.20 41 6.0	55.39
SATURDAY 14.					MONDAY 16.				
0	3 22 10.95	20.197	N.14 41 19.1	95.93	0	5 0 43.75	20.908	N.20 46 35.4	54.43
1	3 24 12.16	20.208	14 50 52.4	95.18	1	5 2 49.25	20.924	20 51 59.1	53.46
2	3 26 13.44	20.219	15 0 21.3	94.43	2	5 4 54.84	20.940	20 57 16.9	52.48
3	3 28 14.79	20.231	15 9 45.6	93.67	3	5 7 0.53	20.956	21 2 28.9	51.50
4	3 30 16.21	20.242	15 19 5.3	92.91	4	5 9 6.31	20.972	21 7 34.9	50.52
5	3 32 17.69	20.253	15 28 20.5	92.14	5	5 11 12.19	20.988	21 12 35.1	49.53
6	3 34 19.25	20.267	15 37 31.0	91.37	6	5 13 18.16	21.003	21 17 29.3	48.54
7	3 36 20.89	20.278	15 46 36.9	90.60	7	5 15 24.23	21.018	21 22 17.6	47.54
8	3 38 22.59	20.291	15 55 38.2	89.82	8	5 17 30.38	21.033	21 26 59.8	46.54
9	3 40 24.38	20.305	16 4 34.7	89.02	9	5 19 36.63	21.050	21 31 36.1	45.55
10	3 42 26.25	20.318	16 13 26.4	88.23	10	5 21 42.98	21.065	21 36 6.4	44.54
11	3 44 28.19	20.330	16 22 13.4	87.43	11	5 23 49.41	21.079	21 40 30.6	43.53
12	3 46 30.27	20.343	16 30 55.5	86.62	12	5 25 55.93	21.094	21 44 48.7	42.52
13	3 48 32.31	20.358	16 39 32.8	85.81	13	5 28 2.54	21.109	21 49 0.8	41.50
14	3 50 34.50	20.372	16 48 5.2	84.99	14	5 30 9.24	21.124	21 53 6.7	40.48
15	3 52 36.77	20.385	16 56 32.7	84.18	15	5 32 16.03	21.139	21 57 6.5	39.46
16	3 54 39.12	20.399	17 4 55.3	83.35	16	5 34 22.91	21.153	22 1 0.2	38.43
17	3 56 41.56	20.414	17 13 12.9	82.52	17	5 36 29.87	21.167	22 4 47.7	37.41
18	3 58 44.09	20.429	17 21 25.5	81.68	18	5 38 36.91	21.181	22 8 29.1	36.38
19	4 0 46.71	20.443	17 29 33.0	80.83	19	5 40 44.04	21.195	22 12 4.2	35.33
20	4 2 49.41	20.458	17 37 35.5	79.99	20	5 42 51.25	21.208	22 15 33.1	34.30
21	4 4 52.21	20.474	17 45 32.9	79.14	21	5 44 58.53	21.221	22 18 55.8	33.27
22	4 6 55.10	20.489	17 53 25.2	78.28	22	5 47 5.90	21.235	22 22 12.3	32.22
23	4 8 58.08	20.504	18 1 12.3	77.43	23	5 49 13.35	21.248	22 25 22.4	31.17
24	4 11 1.15	20.520	N.18 8 54.3	76.56	24	5 51 20.87	21.260	N.22 28 26.3	30.13

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 17.					THURSDAY 19.				
	h m s		° ' " N	"		h m s		° ' " N	"
0	5 51 20.87	21.260	N.22 28 26.3	30.13	0	7 34 19.81	21.528	N.22 48 48.5	22.02
1	5 53 28.47	21.273	22 31 23.9	29.08	1	7 36 28.97	21.526	22 46 33.1	23.11
2	5 55 36.14	21.284	22 34 15.2	28.02	2	7 38 38.12	21.523	22 44 11.2	24.20
3	5 57 43.88	21.297	22 37 0.1	26.96	3	7 40 47.25	21.520	22 41 42.7	25.30
4	5 59 51.70	21.308	22 39 38.7	25.91	4	7 42 56.36	21.517	22 39 7.6	26.39
5	6 1 59.58	21.319	22 42 11.0	24.85	5	7 45 5.45	21.513	22 36 26.0	27.48
6	6 4 7.53	21.331	22 44 36.9	23.78	6	7 47 14.52	21.509	22 33 37.8	28.58
7	6 6 15.55	21.343	22 46 56.4	22.72	7	7 49 23.56	21.504	22 30 43.1	29.66
8	6 8 23.64	21.353	22 49 9.5	21.65	8	7 51 32.57	21.500	22 27 41.9	30.74
9	6 10 31.79	21.363	22 51 16.2	20.58	9	7 53 41.56	21.495	22 24 34.2	31.83
10	6 12 40.00	21.373	22 53 16.5	19.51	10	7 55 50.51	21.490	22 21 20.0	32.92
11	6 14 48.27	21.383	22 55 10.3	18.43	11	7 57 59.44	21.485	22 17 59.2	34.00
12	6 16 56.60	21.393	22 56 57.7	17.37	12	8 0 8.33	21.478	22 14 32.0	35.08
13	6 19 4.99	21.403	22 58 38.7	16.29	13	8 2 17.18	21.473	22 10 58.3	36.16
14	6 21 13.43	21.411	23 0 13.2	15.21	14	8 4 26.00	21.466	22 7 18.1	37.23
15	6 23 21.92	21.420	23 1 41.2	14.13	15	8 6 34.77	21.459	22 3 31.5	38.31
16	6 25 30.47	21.429	23 3 2.7	13.05	16	8 8 43.51	21.453	21 59 38.4	39.38
17	6 27 39.07	21.437	23 4 17.8	11.97	17	8 10 52.20	21.445	21 55 38.9	40.45
18	6 29 47.71	21.444	23 5 26.3	10.88	18	8 13 0.85	21.438	21 51 33.0	41.53
19	6 31 56.40	21.453	23 6 28.3	9.79	19	8 15 9.45	21.429	21 47 20.6	42.59
20	6 34 5.14	21.459	23 7 23.8	8.70	20	8 17 18.00	21.422	21 43 1.9	43.65
21	6 36 13.91	21.466	23 8 12.7	7.61	21	8 19 26.51	21.413	21 38 36.8	44.71
22	6 38 22.73	21.473	23 8 55.1	6.53	22	8 21 34.96	21.405	21 34 5.4	45.77
23	6 40 31.59	21.479	N.23 9 31.0	5.43	23	8 23 43.37	21.397	N.21 29 27.6	46.83
WEDNESDAY 18.					FRIDAY 20.				
	h m s		° ' " N	"		h m s		° ' " N	"
0	6 42 40.48	21.485	N.23 10 0.3	4.34	0	8 25 51.72	21.387	N.21 24 43.5	47.88
1	6 44 49.41	21.491	23 10 23.1	3.25	1	8 28 0.01	21.378	21 19 53.0	48.93
2	6 46 58.37	21.497	23 10 39.3	2.15	2	8 30 8.25	21.368	21 14 56.3	49.98
3	6 49 7.37	21.502	23 10 48.9	1.06	3	8 32 16.43	21.358	21 9 53.3	51.03
4	6 51 16.39	21.506	23 10 52.0	0.03	4	8 34 24.55	21.348	21 4 44.0	52.07
5	6 53 25.44	21.511	23 10 48.5	1.13	5	8 36 32.61	21.338	20 59 28.5	53.11
6	6 55 34.52	21.514	23 10 38.4	2.23	6	8 38 40.61	21.328	20 54 6.7	54.15
7	6 57 43.61	21.518	23 10 21.7	3.33	7	8 40 48.55	21.318	20 48 38.7	55.18
8	6 59 52.73	21.522	23 9 58.4	4.43	8	8 42 56.42	21.307	20 43 4.6	56.20
9	7 2 1.87	21.524	23 9 28.5	5.53	9	8 45 4.23	21.296	20 37 24.3	57.23
10	7 4 11.02	21.527	23 8 52.1	6.63	10	8 47 11.97	21.285	20 31 37.9	58.24
11	7 6 20.19	21.529	23 8 9.0	7.73	11	8 49 19.65	21.273	20 25 45.4	59.27
12	7 8 29.37	21.531	23 7 19.3	8.83	12	8 51 27.25	21.262	20 19 46.7	60.28
13	7 10 38.56	21.533	23 6 23.0	9.93	13	8 53 34.79	21.250	20 13 42.0	61.28
14	7 12 47.76	21.534	23 5 20.2	11.03	14	8 55 42.25	21.238	20 7 31.3	62.29
15	7 14 56.97	21.536	23 4 10.7	12.13	15	8 57 49.65	21.227	20 1 14.5	63.30
16	7 17 6.19	21.536	23 2 54.6	13.23	16	8 59 56.97	21.214	19 54 51.7	64.30
17	7 19 15.40	21.536	23 1 31.9	14.33	17	9 2 4.22	21.203	19 48 22.9	65.29
18	7 21 24.62	21.536	23 0 2.6	15.43	18	9 4 11.40	21.190	19 41 48.2	66.28
19	7 23 33.83	21.535	22 58 26.7	16.53	19	9 6 18.50	21.178	19 35 7.5	67.27
20	7 25 43.04	21.535	22 56 44.3	17.63	20	9 8 25.53	21.165	19 28 21.0	68.25
21	7 27 52.25	21.534	22 54 55.2	18.73	21	9 10 32.48	21.153	19 21 28.5	69.23
22	7 30 1.45	21.532	22 52 59.5	19.83	22	9 12 39.36	21.140	19 14 30.2	70.20
23	7 32 10.63	21.530	22 50 57.3	20.92	23	9 14 46.16	21.127	19 7 26.1	71.18
24	7 34 19.81	21.528	N.22 48 48.5	22.02	24	9 16 52.88	21.114	N.19 0 16.1	72.14

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 21.					MONDAY 23.				
0	9 16 52.88	21.114	N. 19 0 16.1	72.14	0	10 56 46.32	20.550	N. 11 33 28.9	111.55
1	9 18 59.53	21.101	18 53 0.4	73.09	1	10 58 49.60	20.543	11 22 17.6	112.20
2	9 21 6.09	21.088	18 45 39.0	74.05	2	11 0 52.83	20.534	11 11 2.5	112.84
3	9 23 12.58	21.075	18 38 11.8	75.01	3	11 2 56.01	20.528	10 59 43.5	113.47
4	9 25 18.99	21.062	18 30 38.9	75.95	4	11 4 59.16	20.522	10 48 20.8	114.09
5	9 27 25.32	21.048	18 23 0.4	76.88	5	11 7 2.27	20.515	10 36 54.4	114.72
6	9 29 31.57	21.035	18 15 16.3	77.83	6	11 9 5.34	20.508	10 25 24.2	115.33
7	9 31 37.74	21.022	18 7 26.5	78.76	7	11 11 8.37	20.503	10 13 50.5	115.92
8	9 33 43.83	21.009	17 59 31.2	79.68	8	11 13 11.37	20.498	10 2 13.2	116.51
9	9 35 49.85	20.996	17 51 30.4	80.59	9	11 15 14.34	20.493	9 50 32.4	117.10
10	9 37 55.78	20.982	17 43 24.1	81.51	10	11 17 17.28	20.488	9 38 48.0	117.68
11	9 40 1.63	20.968	17 35 12.3	82.42	11	11 19 20.19	20.483	9 27 0.3	118.23
12	9 42 7.40	20.955	17 26 55.1	83.32	12	11 21 23.07	20.478	9 15 9.3	118.78
13	9 44 13.09	20.943	17 18 32.5	84.22	13	11 23 25.93	20.475	9 3 14.9	119.33
14	9 46 18.71	20.929	17 10 4.5	85.11	14	11 25 28.77	20.473	8 51 17.3	119.88
15	9 48 24.24	20.916	17 1 31.2	85.99	15	11 27 31.60	20.469	8 39 16.4	120.40
16	9 50 29.70	20.903	16 52 52.6	86.88	16	11 29 34.40	20.466	8 27 12.5	120.92
17	9 52 35.07	20.889	16 44 8.7	87.75	17	11 31 37.19	20.464	8 15 5.4	121.43
18	9 54 40.37	20.877	16 35 19.6	88.62	18	11 33 39.97	20.463	8 2 55.3	121.94
19	9 56 45.59	20.863	16 26 25.3	89.48	19	11 35 42.74	20.461	7 50 42.1	122.43
20	9 58 50.73	20.850	16 17 25.8	90.34	20	11 37 45.50	20.460	7 38 26.1	122.91
21	10 0 55.79	20.838	16 8 21.2	91.18	21	11 39 48.26	20.460	7 26 7.2	123.38
22	10 3 0.78	20.825	15 59 11.6	92.03	22	11 41 51.02	20.459	7 13 45.5	123.85
23	10 5 5.69	20.813	N. 15 49 56.9	92.87	23	11 43 53.77	20.458	N. 7 1 21.0	124.31
SUNDAY 22.					TUESDAY 24.				
0	10 7 10.53	20.800	N. 15 40 37.2	93.70	0	11 45 56.52	20.459	N. 6 48 53.8	124.75
1	10 9 15.29	20.788	15 31 12.5	94.52	1	11 47 59.28	20.461	6 36 24.0	125.18
2	10 11 19.98	20.776	15 21 43.0	95.33	2	11 50 2.05	20.463	6 23 51.6	125.61
3	10 13 24.60	20.763	15 12 8.5	96.15	3	11 52 4.83	20.463	6 11 16.7	126.03
4	10 15 29.14	20.751	15 2 29.2	96.96	4	11 54 7.61	20.466	5 58 39.3	126.43
5	10 17 33.61	20.739	14 52 45.0	97.76	5	11 56 10.42	20.469	5 45 59.5	126.83
6	10 19 38.01	20.728	14 42 56.1	98.54	6	11 58 13.24	20.472	5 33 17.3	127.22
7	10 21 42.34	20.716	14 33 2.5	99.33	7	12 0 16.08	20.475	5 20 32.9	127.59
8	10 23 46.60	20.704	14 23 4.2	100.11	8	12 2 18.94	20.479	5 7 46.2	127.96
9	10 25 50.79	20.693	14 13 1.2	100.88	9	12 4 21.83	20.483	4 54 57.4	128.32
10	10 27 54.92	20.683	14 2 53.7	101.63	10	12 6 24.74	20.488	4 42 6.4	128.67
11	10 29 58.98	20.671	13 52 41.6	102.38	11	12 8 27.68	20.493	4 29 13.4	129.00
12	10 32 2.97	20.660	13 42 24.9	103.15	12	12 10 30.66	20.500	4 16 18.4	129.33
13	10 34 6.90	20.650	13 32 3.8	103.89	13	12 12 33.68	20.506	4 3 21.5	129.63
14	10 36 10.77	20.640	13 21 38.2	104.63	14	12 14 36.73	20.512	3 50 22.8	129.93
15	10 38 14.58	20.629	13 11 8.3	105.35	15	12 16 39.82	20.519	3 37 22.3	130.23
16	10 40 18.32	20.619	13 0 34.0	106.07	16	12 18 42.96	20.528	3 24 20.0	130.52
17	10 42 22.01	20.611	12 49 55.4	106.78	17	12 20 46.15	20.536	3 11 16.1	130.78
18	10 44 25.65	20.601	12 39 12.6	107.49	18	12 22 49.39	20.544	2 58 10.6	131.05
19	10 46 29.22	20.591	12 28 25.5	108.19	19	12 24 52.68	20.553	2 45 3.5	131.30
20	10 48 32.74	20.583	12 17 34.3	108.88	20	12 26 56.02	20.563	2 31 55.0	131.54
21	10 50 36.21	20.574	12 6 39.0	109.56	21	12 28 59.43	20.573	2 18 45.0	131.78
22	10 52 39.63	20.566	11 55 39.6	110.23	22	12 31 2.90	20.583	2 5 33.7	131.98
23	10 54 43.00	20.558	11 44 36.2	110.89	23	12 33 6.43	20.594	1 52 21.2	132.19
24	10 56 46.32	20.550	N. 11 33 28.9	111.55	24	12 35 10.03	20.606	N. 1 39 7.4	132.39

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 25.					FRIDAY 27.				
0	12 35 10 ^o 03	20 ^o 606	N. 1 39 7 ^o 4	132 ^o 39	0	14 16 22 ^o 97	21 ^o 763	S. 8 56 25 ^o 7	127 ^o 61
1	12 37 13 ^o 70	20 ^o 618	1 25 52 ^o 5	132 ^o 58	1	14 18 33 ^o 66	21 ^o 799	9 9 10 ^o 2	127 ^o 20
2	12 39 17 ^o 45	20 ^o 631	1 12 36 ^o 5	132 ^o 75	2	14 20 44 ^o 56	21 ^o 836	9 21 52 ^o 1	126 ^o 76
3	12 41 21 ^o 27	20 ^o 643	0 59 19 ^o 5	132 ^o 92	3	14 22 55 ^o 69	21 ^o 873	9 34 31 ^o 3	126 ^o 32
4	12 43 25 ^o 17	20 ^o 658	0 46 1 ^o 5	133 ^o 07	4	14 25 7 ^o 04	21 ^o 911	9 47 7 ^o 9	125 ^o 87
5	12 45 29 ^o 16	20 ^o 672	0 32 42 ^o 7	133 ^o 20	5	14 27 18 ^o 62	21 ^o 948	9 59 41 ^o 7	125 ^o 39
6	12 47 33 ^o 23	20 ^o 686	0 19 23 ^o 1	133 ^o 33	6	14 29 30 ^o 42	21 ^o 987	10 12 12 ^o 6	124 ^o 90
7	12 49 37 ^o 39	20 ^o 701	N. 0 6 2 ^o 7	133 ^o 46	7	14 31 42 ^o 46	22 ^o 026	10 24 40 ^o 6	124 ^o 41
8	12 51 41 ^o 64	20 ^o 717	S. 0 7 18 ^o 4	133 ^o 56	8	14 33 54 ^o 73	22 ^o 065	10 37 5 ^o 5	123 ^o 90
9	12 53 45 ^o 99	20 ^o 733	0 20 40 ^o 0	133 ^o 64	9	14 36 7 ^o 24	22 ^o 105	10 49 27 ^o 4	123 ^o 38
10	12 55 50 ^o 44	20 ^o 749	0 34 2 ^o 1	133 ^o 73	10	14 38 19 ^o 99	22 ^o 144	11 1 46 ^o 0	122 ^o 83
11	12 57 54 ^o 98	20 ^o 766	0 47 24 ^o 7	133 ^o 81	11	14 40 32 ^o 97	22 ^o 185	11 14 1 ^o 4	122 ^o 27
12	12 59 59 ^o 63	20 ^o 784	1 0 44 ^o 7	133 ^o 86	12	14 42 46 ^o 21	22 ^o 227	11 26 13 ^o 3	121 ^o 70
13	13 2 4 ^o 39	20 ^o 803	1 14 11 ^o 0	133 ^o 90	13	14 44 59 ^o 69	22 ^o 267	11 38 21 ^o 8	121 ^o 13
14	13 4 9 ^o 26	20 ^o 822	1 27 34 ^o 5	133 ^o 93	14	14 47 13 ^o 41	22 ^o 308	11 50 26 ^o 8	120 ^o 53
15	13 6 14 ^o 25	20 ^o 841	1 40 58 ^o 2	133 ^o 96	15	14 49 27 ^o 38	22 ^o 349	12 2 28 ^o 1	119 ^o 92
16	13 8 19 ^o 35	20 ^o 860	1 54 22 ^o 0	133 ^o 97	16	14 51 41 ^o 60	22 ^o 392	12 14 25 ^o 8	119 ^o 29
17	13 10 24 ^o 57	20 ^o 881	2 7 45 ^o 8	133 ^o 97	17	14 53 56 ^o 08	22 ^o 434	12 26 19 ^o 6	118 ^o 65
18	13 12 29 ^o 92	20 ^o 902	2 21 9 ^o 6	133 ^o 96	18	14 56 10 ^o 81	22 ^o 477	12 38 9 ^o 6	118 ^o 01
19	13 14 35 ^o 39	20 ^o 923	2 34 33 ^o 3	133 ^o 93	19	14 58 25 ^o 80	22 ^o 520	12 49 55 ^o 7	117 ^o 34
20	13 16 40 ^o 99	20 ^o 944	2 47 56 ^o 7	133 ^o 88	20	15 0 41 ^o 05	22 ^o 563	13 1 37 ^o 7	116 ^o 65
21	13 18 46 ^o 72	20 ^o 967	3 1 19 ^o 9	133 ^o 83	21	15 2 56 ^o 56	22 ^o 608	13 13 15 ^o 5	115 ^o 96
22	13 20 52 ^o 59	20 ^o 990	3 14 42 ^o 7	133 ^o 78	22	15 5 12 ^o 34	22 ^o 651	13 24 49 ^o 2	115 ^o 26
23	13 22 58 ^o 60	21 ^o 014	S. 3 28 5 ^o 2	133 ^o 70	23	15 7 28 ^o 37	22 ^o 694	S. 13 36 18 ^o 6	114 ^o 53
THURSDAY 26.					SATURDAY 28.				
0	13 25 4 ^o 76	21 ^o 038	S. 3 41 27 ^o 1	133 ^o 61	0	15 9 44 ^o 67	22 ^o 739	S. 13 47 43 ^o 6	113 ^o 80
1	13 27 11 ^o 06	21 ^o 062	3 54 48 ^o 5	133 ^o 51	1	15 12 1 ^o 24	22 ^o 784	13 59 4 ^o 2	113 ^o 05
2	13 29 17 ^o 50	21 ^o 087	4 8 9 ^o 2	133 ^o 39	2	15 14 18 ^o 08	22 ^o 829	14 10 20 ^o 2	112 ^o 29
3	13 31 24 ^o 10	21 ^o 113	4 21 29 ^o 2	133 ^o 26	3	15 16 35 ^o 19	22 ^o 874	14 21 31 ^o 7	111 ^o 52
4	13 33 30 ^o 85	21 ^o 138	4 34 48 ^o 3	133 ^o 12	4	15 18 52 ^o 57	22 ^o 919	14 32 38 ^o 4	110 ^o 72
5	13 35 37 ^o 76	21 ^o 165	4 48 6 ^o 6	132 ^o 98	5	15 21 10 ^o 22	22 ^o 964	14 43 40 ^o 3	109 ^o 92
6	13 37 44 ^o 83	21 ^o 193	5 1 24 ^o 0	132 ^o 82	6	15 23 28 ^o 14	23 ^o 010	14 54 37 ^o 4	109 ^o 10
7	13 39 52 ^o 07	21 ^o 220	5 14 40 ^o 4	132 ^o 63	7	15 25 46 ^o 34	23 ^o 056	15 5 29 ^o 5	108 ^o 26
8	13 41 59 ^o 47	21 ^o 248	5 27 55 ^o 6	132 ^o 44	8	15 28 4 ^o 81	23 ^o 101	15 16 16 ^o 5	107 ^o 41
9	13 44 7 ^o 04	21 ^o 276	5 41 9 ^o 7	132 ^o 24	9	15 30 23 ^o 55	23 ^o 148	15 26 58 ^o 4	106 ^o 56
10	13 46 14 ^o 78	21 ^o 305	5 54 22 ^o 5	132 ^o 03	10	15 32 42 ^o 58	23 ^o 194	15 37 35 ^o 2	105 ^o 68
11	13 48 22 ^o 70	21 ^o 334	6 7 34 ^o 0	131 ^o 80	11	15 35 1 ^o 88	23 ^o 239	15 48 6 ^o 6	104 ^o 78
12	13 50 30 ^o 79	21 ^o 364	6 20 44 ^o 1	131 ^o 56	12	15 37 21 ^o 45	23 ^o 285	15 58 32 ^o 6	103 ^o 88
13	13 52 39 ^o 07	21 ^o 395	6 33 52 ^o 7	131 ^o 30	13	15 39 41 ^o 30	23 ^o 332	16 8 53 ^o 2	102 ^o 98
14	13 54 47 ^o 53	21 ^o 426	6 46 59 ^o 7	131 ^o 03	14	15 42 1 ^o 43	23 ^o 378	16 19 8 ^o 3	102 ^o 04
15	13 56 56 ^o 18	21 ^o 458	7 0 5 ^o 1	130 ^o 75	15	15 44 21 ^o 84	23 ^o 425	16 29 17 ^o 7	101 ^o 09
16	13 59 5 ^o 03	21 ^o 490	7 13 8 ^o 7	130 ^o 45	16	15 46 42 ^o 53	23 ^o 472	16 39 21 ^o 4	100 ^o 14
17	14 1 14 ^o 06	21 ^o 522	7 26 10 ^o 5	130 ^o 14	17	15 49 3 ^o 50	23 ^o 518	16 49 19 ^o 4	99 ^o 18
18	14 3 23 ^o 29	21 ^o 555	7 39 10 ^o 4	129 ^o 83	18	15 51 24 ^o 74	23 ^o 563	16 59 11 ^o 5	98 ^o 19
19	14 5 32 ^o 72	21 ^o 589	7 52 8 ^o 4	129 ^o 49	19	15 53 46 ^o 26	23 ^o 611	17 8 57 ^o 7	97 ^o 19
20	14 7 42 ^o 36	21 ^o 623	8 5 4 ^o 3	129 ^o 13	20	15 56 8 ^o 07	23 ^o 658	17 18 37 ^o 8	96 ^o 18
21	14 9 52 ^o 20	21 ^o 657	8 17 58 ^o 0	128 ^o 78	21	15 58 30 ^o 15	23 ^o 703	17 28 11 ^o 8	95 ^o 16
22	14 12 2 ^o 24	21 ^o 692	8 30 49 ^o 6	128 ^o 41	22	16 0 52 ^o 50	23 ^o 749	17 37 39 ^o 7	94 ^o 13
23	14 14 12 ^o 50	21 ^o 728	8 43 38 ^o 9	128 ^o 01	23	16 3 15 ^o 14	23 ^o 796	17 47 1 ^o 3	93 ^o 08
24	14 16 22 ^o 97	21 ^o 763	S. 8 56 25 ^o 7	127 ^o 61	24	16 5 38 ^o 05	23 ^o 842	S. 17 56 16 ^o 6	92 ^o 02

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 29.					MONDAY 30.				
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
0	16 538.05	23.842	S. 17 56 16.6	92.02	0	17 4 7.21	24.861	S. 21 3 26.6	62.84
1	16 8 1.24	23.888	18 5 25.5	90.93	1	17 6 36.49	24.898	21 9 39.6	61.48
2	16 10 24.70	23.933	18 14 27.8	89.84	2	17 9 5.98	24.934	21 15 44.4	60.12
3	16 12 48.43	23.978	18 23 23.6	88.74	3	17 11 35.70	24.970	21 21 41.0	58.74
4	16 15 12.44	24.024	18 32 12.7	87.63	4	17 14 5.62	25.004	21 27 29.3	57.36
5	16 17 36.72	24.069	18 40 55.1	86.50	5	17 16 35.75	25.038	21 33 9.3	55.97
6	16 20 1.27	24.114	18 49 30.7	85.36	6	17 19 6.08	25.072	21 38 40.9	54.57
7	16 22 26.09	24.159	18 57 59.4	84.21	7	17 21 36.61	25.105	21 44 4.1	53.16
8	16 24 51.18	24.203	19 6 21.2	83.05	8	17 24 7.34	25.138	21 49 18.8	51.74
9	16 27 16.53	24.248	19 14 36.0	81.88	9	17 26 38.26	25.168	21 54 25.0	50.31
10	16 29 42.15	24.292	19 22 43.7	80.68	10	17 29 9.36	25.199	21 59 22.5	48.88
11	16 32 8.03	24.335	19 30 44.2	79.48	11	17 31 40.65	25.229	22 4 11.5	47.43
12	16 34 34.17	24.378	19 38 37.4	78.26	12	17 34 12.11	25.258	22 8 51.7	45.98
13	16 37 0.57	24.421	19 46 23.3	77.04	13	17 36 43.74	25.286	22 13 23.2	44.52
14	16 39 27.22	24.463	19 54 1.9	75.81	14	17 39 15.54	25.313	22 17 45.9	43.05
15	16 41 54.13	24.506	20 1 33.0	74.56	15	17 41 47.50	25.339	22 21 59.8	41.58
16	16 44 21.29	24.547	20 8 56.6	73.30	16	17 44 19.61	25.365	22 26 4.9	40.11
17	16 46 48.69	24.588	20 16 12.6	72.03	17	17 46 51.88	25.390	22 30 1.1	38.62
18	16 49 16.34	24.628	20 23 20.9	70.74	18	17 49 24.29	25.413	22 33 48.3	37.12
19	16 51 44.23	24.668	20 30 21.5	69.45	19	17 51 56.84	25.437	22 37 26.5	35.63
20	16 54 12.36	24.708	20 37 14.3	68.15	20	17 54 29.53	25.458	22 40 55.8	34.13
21	16 56 40.73	24.748	20 43 59.3	66.84	21	17 57 2.34	25.479	22 44 16.0	32.61
22	16 59 9.33	24.786	20 50 36.4	65.52	22	17 59 35.28	25.499	22 47 27.1	31.09
23	17 1 38.16	24.823	20 57 5.5	64.18	23	18 2 8.33	25.518	22 50 29.1	29.57
24	17 4 7.21	24.861	S. 21 3 26.6	62.84	24	18 4 41.50	25.535	S. 22 53 22.0	28.05

PHASES OF THE MOON.

			^h ^m
Sept. 2	☾	First Quarter	7 34.7
9	☉	Full Moon	1 52.7
16	☾	Last Quarter	16 48.8
24	●	New Moon	14 41.7

			^h
Sept. 5	☾	Perigee	14
17	☾	Apogee	13

MEAN TIME.										
LUNAR DISTANCES.										
Day.	Star's Name and Position.		Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	SUN	W.	72 57 49	2716	74 34 7	2708	76 10 36	2700	77 47 14	2692
	Spica	W.	30 22 45	2512	32 3 41	2493	33 45 4	2477	35 26 50	2461
	Jupiter	E.	36 34 2	2397	34 50 23	2390	33 6 34	2383	31 22 35	2376
	α Aquilæ	E.	69 5 7	3181	67 38 35	3193	66 12 18	3208	64 46 18	3226
	Fomalhaut	E.	100 51 49	2590	99 12 40	2580	97 33 18	2572	95 53 44	2563
2	SUN	W.	85 53 2	2655	87 30 42	2649	89 8 31	2641	90 46 30	2635
	Spica	W.	44 0 42	2398	45 44 20	2387	47 28 13	2377	49 12 21	2367
	α Aquilæ	E.	57 42 30	3355	56 19 22	3390	54 56 54	3431	53 35 13	3478
	Fomalhaut	E.	87 33 12	2527	85 52 36	2522	84 11 53	2516	82 31 2	2512
	α Pegasi	E.	103 58 39	2756	102 23 14	2744	100 47 33	2732	99 11 36	2722
3	SUN	W.	98 58 42	2601	100 37 35	2596	102 16 36	2590	103 55 45	2585
	Spica	W.	57 56 17	2325	59 41 40	2317	61 27 14	2310	63 12 59	2304
	α Aquilæ	E.	47 1 37	3803	45 46 38	3895	44 33 13	3997	43 21 30	4113
	Fomalhaut	E.	74 5 19	2494	72 23 58	2493	70 42 35	2492	69 1 10	2492
	α Pegasi	E.	91 8 43	2680	89 31 36	2675	87 54 22	2671	86 17 3	2668
4	SUN	W.	112 13 21	2559	113 53 12	2556	115 33 8	2551	117 13 11	2548
	Spica	W.	72 4 2	2274	73 50 40	2269	75 37 25	2264	77 24 17	2260
	Antares	W.	26 34 31	2407	28 17 56	2384	30 1 54	2364	31 46 20	2348
	Fomalhaut	E.	60 34 27	2504	58 53 20	2511	57 12 22	2517	55 31 33	2527
	α Pegasi	E.	78 9 33	2661	76 32 1	2663	74 54 32	2666	73 17 7	2670
5	Spica	W.	86 20 5	2243	88 7 28	2241	89 54 55	2239	91 42 24	2238
	Antares	W.	40 33 39	2290	42 19 53	2283	44 6 17	2277	45 52 51	2271
	Jupiter	W.	20 1 44	2227	21 49 32	2224	23 37 24	2222	25 25 19	2219
	Fomalhaut	E.	47 11 28	2601	45 32 34	2624	43 54 12	2650	42 16 25	2681
	α Pegasi	E.	65 12 7	2715	63 35 47	2729	61 59 45	2744	60 24 4	2763
6	α Arietis	E.	107 19 47	2364	105 35 21	2359	103 50 48	2356	102 6 10	2352
	Antares	W.	54 47 21	2255	56 34 27	2253	58 21 36	2253	60 8 45	2252
	Jupiter	W.	34 25 24	2217	36 13 26	2218	38 1 27	2219	39 49 26	2221
	Fomalhaut	E.	34 20 5	2924	32 48 17	3000	31 18 4	3088	29 49 40	3193
	α Pegasi	E.	52 32 44	2896	51 0 20	2932	49 28 42	2974	47 57 57	3021
7	α Arietis	E.	93 22 0	2344	91 37 5	2346	89 52 12	2346	88 7 20	2348
	Antares	W.	69 4 15	2261	70 51 12	2264	72 38 4	2269	74 24 49	2272
	Jupiter	W.	48 48 30	2236	50 36 4	2240	52 23 32	2245	54 10 53	2250
	α Aquilæ	W.	36 21 21	5116	37 16 46	4877	38 15 19	4669	39 16 45	4485
	α Pegasi	E.	40 41 5	3358	39 18 1	3454	37 56 46	3563	36 37 31	3688
8	α Arietis	E.	79 24 3	2369	77 39 44	2375	75 55 33	2382	74 11 33	2389
	Aldebaran	E.	110 20 59	2228	108 33 13	2233	106 45 34	2237	104 58 1	2241
	Antares	W.	83 16 43	2303	85 2 38	2311	86 48 21	2320	88 33 52	2328
	Jupiter	W.	63 5 26	2283	64 51 50	2291	66 38 2	2300	68 24 2	2309
	α Aquilæ	W.	44 59 10	3854	46 13 16	3768	47 28 51	3693	48 45 46	3627
9	α Arietis	E.	65 34 42	2442	63 52 7	2455	62 9 50	2469	60 27 53	2485
	Aldebaran	E.	96 2 22	2274	94 15 45	2282	92 29 19	2290	90 43 5	2298
	Antares	W.	97 18 7	2378	99 2 13	2389	100 46 3	2401	102 29 36	2413
	Jupiter	W.	77 10 38	2359	78 55 12	2370	80 39 30	2382	82 23 31	2393
	α Aquilæ	W.	55 25 48	3395	56 48 10	3365	58 11 7	3338	59 34 34	3316

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	SUN W.	79 24 4	2686	81 1 3	2678	82 38 13	2670	84 15 33	2663
	Spica W.	37 8 58	2446	38 51 27	2433	40 34 14	2421	42 17 19	2408
	Jupiter E.	29 38 26	2370	27 54 8	2363	26 9 40	2357	24 25 3	2351
	α Aquilæ E.	63 20 40	3245	61 55 24	3268	60 30 35	3294	59 6 16	3322
	Fomalhaut E.	94 13 58	2556	92 34 2	2548	90 53 55	2540	89 13 38	2534
2	SUN W.	92 24 38	2627	94 2 56	2621	95 41 22	2614	97 19 58	2608
	Spica W.	50 56 43	2358	52 41 18	2349	54 26 6	2341	56 11 6	2333
	α Aquilæ E.	52 14 24	3529	50 54 31	3586	49 35 41	3650	48 18 1	3722
	Fomalhaut E.	80 50 5	2507	79 9 1	2502	77 27 51	2499	75 46 37	2497
	α Pegasi E.	97 35 25	2712	95 59 1	2704	94 22 26	2695	92 45 39	2688
3	SUN W.	105 35 1	2578	107 14 26	2573	108 53 57	2568	110 33 36	2564
	Spica W.	64 58 53	2297	66 44 57	2291	68 31 10	2285	70 17 32	2279
	α Aquilæ E.	42 11 41	4243	41 3 55	4390	39 58 25	4557	38 55 23	4750
	Fomalhaut E.	67 19 45	2492	65 38 21	2494	63 56 59	2497	62 15 41	2499
	α Pegasi E.	84 39 40	2663	83 2 11	2661	81 24 39	2660	79 47 6	2660
4	SUN W.	118 53 18	2545	120 33 29	2542	122 13 44	2539	123 54 3	2536
	Spica W.	79 11 16	2256	80 58 21	2252	82 45 31	2249	84 32 46	2246
	Antares W.	33 31 10	2333	35 16 22	2320	37 1 52	2309	38 47 38	2299
	Fomalhaut E.	53 50 57	2538	52 10 36	2550	50 30 32	2564	48 50 48	2582
	α Pegasi E.	71 39 47	2676	70 2 36	2683	68 25 34	2692	66 48 44	2702
5	Spica W.	93 29 55	2237	95 17 28	2237	97 5 1	2237	98 52 34	2237
	Antares W.	47 39 33	2266	49 26 22	2262	51 13 18	2259	53 0 18	2257
	Jupiter W.	27 13 18	2218	29 1 18	2218	30 49 19	2217	32 37 22	2217
	Fomalhaut E.	40 39 20	2716	39 3 2	2757	37 27 38	2805	35 53 16	2859
	α Pegasi E.	58 48 47	2783	57 13 57	2806	55 39 37	2833	54 5 52	2862
6	α Arietis E.	100 21 26	2349	98 36 38	2347	96 51 47	2346	95 6 54	2345
	Antares W.	61 55 55	2253	63 43 3	2254	65 30 10	2256	67 17 15	2259
	Jupiter W.	41 37 22	2223	43 25 15	2225	45 13 5	2229	47 0 50	2232
	Fomalhaut E.	28 23 23	3319	26 59 33	3470	25 38 35	3651	24 20 56	3875
	α Pegasi E.	46 28 10	3073	44 59 28	3132	43 31 58	3198	42 5 47	3274
7	α Arietis E.	86 22 31	2351	84 37 46	2354	82 53 5	2359	81 8 31	2363
	Antares W.	76 11 29	2278	77 58 0	2283	79 44 24	2290	81 30 38	2296
	Jupiter W.	55 58 6	2256	57 45 10	2262	59 32 5	2268	61 18 51	2276
	α Aquilæ W.	40 20 50	4325	41 27 20	4784	42 36 1	4060	43 46 41	3950
	α Pegasi E.	35 20 31	3830	34 6 0	3992	32 54 13	4182	31 45 30	4400
8	α Arietis E.	72 27 43	2398	70 44 6	2408	69 0 43	2418	67 17 34	2430
	Aldebaran E.	103 10 35	2247	101 23 18	2253	99 36 10	2260	97 49 11	2266
	Antares W.	90 19 11	2337	92 4 17	2346	93 49 9	2357	95 33 46	2368
	Jupiter W.	70 9 49	2318	71 55 23	2327	73 40 43	2337	75 25 48	2348
	α Aquilæ W.	50 3 51	3567	51 23 1	3515	52 43 8	3470	54 4 5	3430
9	α Arietis E.	58 46 18	2501	57 5 6	2518	55 24 18	2537	53 43 56	2557
	Aldebaran E.	88 57 3	2308	87 11 15	2318	85 25 42	2328	83 40 23	2337
	Antares W.	104 12 52	2426	105 55 50	2440	107 38 28	2453	109 20 48	2467
	Jupiter W.	84 7 15	2405	85 50 42	2418	87 33 51	2431	89 16 42	2445
	α Aquilæ W.	60 58 26	3297	62 22 41	3281	63 47 15	3269	65 12 3	3258

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^a .	P.L. of diff.	VI ^a .	P.L. of diff.	IX ^a .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
9	α Arietis E.	52 4 2	2579	50 24 38	2602	48 45 46	2626	47 7 27	2654
	Aldebaran E.	81 55 18	2348	80 10 29	2360	78 25 57	2371	76 41 41	2383
10	Jupiter W.	90 59 13	2458	92 41 25	2470	94 23 20	2485	96 4 54	2500
	α Aquilæ W.	66 37 4	3250	68 2 14	3244	69 27 31	3241	70 52 52	3239
	Fomalhaut W.	31 12 42	3242	32 38 1	3185	34 4 28	3136	35 31 54	3097
	α Arietis E.	39 5 57	2825	37 32 2	2870	35 59 5	2920	34 27 11	2974
	Aldebaran E.	68 4 44	2447	66 22 16	2461	64 40 8	2475	62 58 19	2489
11	α Aquilæ W.	77 59 28	3255	79 24 32	3262	80 49 28	3270	82 14 14	3281
	Fomalhaut W.	42 58 30	2987	44 28 59	2977	45 59 41	2969	47 30 32	2965
	α Pegasi W.	32 18 30	4395	33 23 56	4253	34 31 32	4129	35 41 6	4021
	Aldebaran E.	54 34 19	2563	52 54 33	2578	51 15 8	2594	49 36 5	2609
	Pollux E.	98 45 50	2575	97 6 21	2591	95 27 13	2605	93 48 25	2621
12	α Aquilæ W.	89 14 47	3345	90 38 7	3360	92 1 10	3377	93 23 53	3393
	Fomalhaut W.	55 5 31	2967	56 36 25	2971	58 7 15	2977	59 37 57	2983
	α Pegasi W.	41 51 1	3674	43 8 16	3631	44 26 17	3593	45 44 59	3561
	Aldebaran E.	41 26 5	2688	39 49 9	2704	38 12 34	2719	36 36 20	2736
	Pollux E.	85 39 32	2696	84 2 47	2711	82 26 22	2725	80 50 16	2741
	Venus E.	105 51 39	3095	104 23 23	3112	102 55 28	3128	101 27 52	3145
13	Fomalhaut W.	67 9 19	3022	68 39 5	3030	70 8 40	3040	71 38 3	3049
	α Pegasi W.	52 25 54	3456	53 47 7	3444	55 8 34	3433	56 30 13	3425
	Pollux E.	72 54 46	2815	71 20 38	2829	69 46 48	2844	68 13 17	2858
	Venus E.	94 14 50	3225	92 49 10	3241	91 23 49	3256	89 58 46	3270
	Mars E.	104 24 18	3019	102 54 29	3033	101 24 57	3047	99 55 43	3062
	SUN E.	131 13 34	3168	129 46 46	3183	128 20 16	3197	126 54 3	3210
14	Fomalhaut W.	79 2 1	3099	80 30 12	3109	81 58 11	3119	83 25 58	3129
	α Pegasi W.	63 20 12	3405	64 42 23	3403	66 4 36	3404	67 26 48	3405
	Pollux E.	60 30 6	2924	58 58 18	2937	57 26 46	2949	55 55 29	2962
	Venus E.	82 57 46	3342	81 34 23	3355	80 11 15	3367	78 48 21	3380
	Mars E.	92 33 50	3129	91 6 15	3141	89 38 55	3153	88 11 50	3165
	SUN E.	119 46 57	3276	118 22 18	3288	116 57 53	3301	115 33 43	3312
15	Fomalhaut W.	90 41 57	3176	92 8 35	3185	93 35 2	3194	95 1 18	3203
	α Pegasi W.	74 17 28	3414	75 39 29	3417	77 1 26	3420	78 23 20	3423
	α Arietis W.	30 45 33	3547	32 5 5	3510	33 25 18	3479	34 46 6	3451
	Pollux E.	48 22 51	3019	46 53 2	3029	45 23 25	3039	43 54 1	3050
	Venus E.	71 57 18	3436	70 35 42	3446	69 14 18	3455	67 53 4	3465
	Mars E.	80 59 45	3218	79 33 57	3227	78 8 20	3236	76 42 53	3244
	SUN E.	108 36 3	3365	107 13 7	3374	105 50 21	3384	104 27 46	3392
16	α Pegasi W.	85 11 48	3442	86 33 17	3446	87 54 42	3450	89 16 2	3454
	α Arietis W.	41 36 31	3360	42 59 33	3348	44 22 49	3337	45 46 18	3327
	Pollux E.	36 30 6	3099	35 1 55	3109	33 33 56	3118	32 6 8	3129
	Venus E.	61 9 16	3502	59 48 54	3508	58 28 39	3514	57 8 30	3519
	Mars E.	69 37 55	3279	68 13 19	3285	66 48 50	3289	65 24 26	3294
	SUN E.	97 37 2	3427	96 15 16	3432	94 53 36	3438	93 32 3	3442
17	α Pegasi W.	96 1 36	3473	97 22 30	3477	98 43 20	3482	100 4 4	3485
	α Arietis W.	52 46 19	3287	54 10 46	3280	55 35 21	3274	57 0 3	3267
	Aldebaran W.	20 13 45	3110	21 41 43	3105	23 9 46	3102	24 37 53	3099

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
9	α Arietis E.	45 29 45	2683	43 52 42	2714	42 16 21	2747	40 40 44	2785
	Aldebaran E.	74 57 42	2395	73 14 0	2408	71 30 36	2421	69 47 31	2433
10	Jupiter W.	97 46 8	2514	99 27 2	2528	101 7 36	2543	102 47 50	2558
	α Aquilæ W.	72 18 15	3239	73 43 38	3240	75 9 0	3244	76 34 17	3249
	Fomalhaut W.	37 0 7	3065	38 29 0	3039	39 58 25	3017	41 28 17	3000
	α Arietis E.	32 56 26	3036	31 26 58	3104	29 58 53	3183	28 32 23	3271
	Aldebaran E.	61 16 51	2503	59 35 42	2518	57 54 54	2533	56 14 26	2548
11	α Aquilæ W.	83 38 48	3292	85 3 10	3304	86 27 17	3316	87 51 10	3330
	Fomalhaut W.	49 1 29	2962	50 32 30	2961	52 3 32	2962	53 34 33	2964
	α Pegasi W.	36 52 25	3931	38 5 13	3852	39 19 22	3784	40 34 41	3726
	Aldebaran E.	47 57 22	2625	46 19 1	2640	44 41 1	2656	43 3 22	2672
	Pollux E.	92 9 58	2635	90 31 51	2651	88 54 5	2665	87 16 38	2681
12	α Aquilæ W.	94 46 17	3412	96 8 20	3431	97 30 2	3450	98 51 22	3469
	Fomalhaut W.	61 8 31	2989	62 38 58	2997	64 9 15	3005	65 39 22	3013
	α Pegasi W.	47 4 16	3533	48 24 4	3508	49 44 19	3488	51 4 57	3471
	Aldebaran E.	35 0 28	2753	33 24 58	2768	31 49 48	2785	30 15 0	2802
	Pollux E.	79 14 31	2756	77 39 6	2771	76 4 0	2786	74 29 14	2800
	Venus E.	100 0 37	3161	98 33 41	3178	97 7 5	3193	95 40 48	3209
13	Fomalhaut W.	73 7 15	3060	74 36 14	3069	76 5 2	3079	77 33 37	3088
	α Pegasi W.	57 52 1	3419	59 13 56	3413	60 35 58	3409	61 58 4	3408
	Pollux E.	66 40 4	2872	65 7 9	2885	63 34 31	2898	62 2 10	2912
	Venus E.	88 34 0	3286	87 9 32	3300	85 45 20	3314	84 21 25	3328
	Mars E.	98 26 47	3076	96 58 8	3090	95 29 46	3103	94 1 40	3116
	Sun E.	125 28 6	3224	124 2 25	3238	122 37 1	3250	121 11 51	3264
14	Fomalhaut W.	84 53 33	3138	86 20 56	3148	87 48 8	3158	89 15 8	3167
	α Pegasi W.	68 48 59	3405	70 11 10	3407	71 33 18	3408	72 55 25	3412
	Pollux E.	54 24 28	2973	52 53 42	2985	51 23 11	2997	49 52 54	3008
	Venus E.	77 25 42	3393	76 3 17	3403	74 41 4	3415	73 19 5	3426
	Mars E.	86 44 59	3176	85 18 21	3188	83 51 57	3198	82 25 45	3208
	Sun E.	114 9 45	3324	112 46 1	3335	111 22 30	3345	109 59 11	3355
15	Fomalhaut W.	96 27 24	3211	97 53 20	3220	99 19 5	3228	100 44 41	3237
	α Pegasi W.	79 45 10	3427	81 6 56	3431	82 28 37	3434	83 50 15	3438
	α Arietis W.	36 7 25	3429	37 29 9	3408	38 51 17	3390	40 13 45	3374
	Pollux E.	42 24 50	3060	40 55 51	3069	39 27 4	3079	37 58 29	3089
	Venus E.	66 32 1	3473	65 11 7	3480	63 50 21	3493	62 29 45	3496
	Mars E.	75 17 36	3252	73 52 28	3259	72 27 29	3266	71 2 38	3273
16	Sun E.	103 5 20	3400	101 43 3	3408	100 20 55	3415	98 58 55	3421
	α Pegasi W.	90 37 17	3457	91 58 29	3462	93 19 36	3466	94 40 38	3470
	α Arietis W.	47 9 58	3318	48 33 49	3309	49 57 50	3300	51 22 1	3294
	Pollux E.	30 38 33	3139	29 11 11	3150	27 44 2	3163	26 17 8	3176
	Venus E.	55 48 27	3523	54 28 28	3527	53 8 34	3531	51 48 44	3534
	Mars E.	64 0 8	3298	62 35 54	3301	61 11 44	3305	59 47 38	3307
17	Sun E.	92 10 34	3446	90 49 10	3449	89 27 49	3453	88 6 33	3455
	α Pegasi W.	101 24 45	3490	102 45 20	3494	104 5 51	3498	105 26 17	3502
	α Arietis W.	58 24 53	3260	59 49 51	3254	61 14 56	3247	62 40 10	3242
	Aldebaran W.	26 6 4	3095	27 34 20	3092	29 2 39	3089	30 31 2	3085

MEAN TIME.										
LUNAR DISTANCES.										
Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^a .	P.L. of diff.	VI ^a .	P.L. of diff.	IX ^a .	P.L. of diff.	
17	Venus E.	50 28 57	3536	49 9 13	3538	47 49 31	3540	46 29 51	3541	
	Mars E.	58 23 35	3309	56 59 34	3311	55 35 35	3312	54 11 37	3313	
	SUN E.	86 45 19	3457	85 24 7	3459	84 2 57	3460	82 41 48	3461	
18	α Arietis W.	64 5 30	3235	65 30 58	3228	66 56 34	3221	68 22 18	3214	
	Aldebaran W.	31 59 30	3082	33 28 2	3078	34 56 39	3073	36 25 21	3069	
	Venus E.	39 51 34	3538	38 31 52	3536	37 12 8	3534	35 52 21	3532	
	Mars E.	47 11 47	3307	45 47 44	3306	44 23 39	3303	42 59 31	3300	
	SUN E.	75 56 0	3455	74 34 46	3453	73 13 29	3449	71 52 8	3446	
19	α Arietis W.	75 33 3	3178	76 59 39	3170	78 26 24	3162	79 53 19	3154	
	Aldebaran W.	43 50 25	3041	45 19 47	3034	46 49 18	3027	48 18 57	3020	
	Venus E.	29 12 38	3514	27 52 29	3510	26 32 16	3506	25 11 58	3501	
	Mars E.	35 57 45	3278	34 33 8	3272	33 8 24	3267	31 43 34	3261	
	SUN E.	65 4 17	3422	63 42 25	3416	62 20 27	3409	60 58 21	3403	
20	α Arietis W.	87 10 26	3110	88 38 24	3101	90 6 32	3091	91 34 52	3082	
	Aldebaran W.	55 49 38	2978	57 20 18	2969	58 51 10	2960	60 22 13	2950	
	SUN E.	54 5 47	3364	52 42 49	3354	51 19 40	3345	49 56 21	3336	
21	α Arietis W.	98 59 29	3034	100 29 0	3025	101 58 42	3014	103 28 37	3005	
	Aldebaran W.	68 0 44	2897	69 33 7	2886	71 5 44	2874	72 38 36	2862	
	Pollux W.	24 17 58	3006	25 48 3	2982	27 18 38	2961	28 49 40	2941	
	SUN E.	42 57 2	3288	41 32 36	3278	40 7 59	3268	38 43 10	3259	
22	Aldebaran W.	80 26 43	2803	82 1 7	2790	83 35 48	2779	85 10 44	2766	
	Pollux W.	36 30 48	2852	38 4 8	2837	39 37 48	2821	41 11 49	2805	
	SUN E.	31 36 17	3213	30 10 23	3205	28 44 21	3198	27 18 10	3193	
26	SUN W.	18 6 58	2924	19 38 46	2890	21 11 18	2863	22 44 24	2842	
	Antares E.	48 3 23	2497	46 22 5	2493	44 40 42	2488	42 59 12	2485	
	Jupiter E.	69 4 36	2467	67 22 37	2459	65 40 26	2451	63 58 4	2443	
	α Aquilæ E.	95 33 50	3116	94 6 0	3105	92 37 56	3095	91 9 40	3087	
27	SUN W.	30 36 15	2759	32 11 37	2747	33 47 14	2737	35 23 5	2727	
	Antares E.	34 31 5	2485	32 49 31	2490	31 8 4	2496	29 26 45	2506	
	Jupiter E.	55 23 37	2409	53 40 15	2403	51 56 44	2397	50 13 5	2391	
	α Aquilæ E.	83 46 19	3064	82 17 25	3064	80 48 31	3065	79 19 38	3068	
28	SUN W.	43 25 21	2687	45 2 18	2681	46 39 24	2675	48 16 37	2669	
	Jupiter E.	41 32 59	2368	39 48 38	2364	38 4 12	2360	36 19 39	2357	
	α Aquilæ E.	71 56 42	3105	70 28 38	3117	69 0 49	3133	67 33 19	3150	
	Fomalhaut E.	103 55 47	2540	102 15 30	2534	100 35 4	2527	98 54 29	2522	
29	SUN W.	56 24 23	2648	58 2 13	2645	59 40 7	2642	61 18 5	2639	
	α Aquilæ E.	60 22 0	3275	58 57 19	3310	57 33 19	3348	56 10 3	3391	
	Fomalhaut E.	90 29 54	2503	88 48 45	2501	87 7 33	2499	85 26 18	2498	
	α Pegasi E.	106 55 47	2747	105 20 10	2738	103 44 20	2729	102 8 19	2722	
30	SUN W.	69 28 46	2629	71 7 2	2627	72 45 20	2626	74 23 39	2625	
	α Aquilæ E.	49 27 36	3684	48 10 32	3764	46 54 52	3852	45 40 43	3951	
	Fomalhaut E.	76 59 58	2502	75 18 47	2504	73 37 39	2507	71 56 35	2510	
	α Pegasi E.	94 6 10	2698	92 29 27	2696	90 52 42	2696	89 15 56	2695	

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
17	Venus E.	45 10 12	3541	43 50 33	3541	42 30 54	3540	41 11 14	3540
	Mars E.	52 47 40	3313	51 23 43	3312	49 59 45	3312	48 35 47	3310
	Sun E.	81 20 40	3460	79 59 31	3460	78 38 22	3459	77 17 12	3457
18	α Arietis W.	69 48 30	3208	71 14 10	3200	72 40 19	3193	74 6 36	3185
	Aldebaran W.	37 54 .9	3064	39 23 3	3059	40 52 3	3052	42 21 11	3047
	Venus E.	34 32 32	3528	33 12 39	3525	31 52 42	3522	30 32 42	3518
	Mars E.	41 35 19	3296	40 11 3	3292	38 46 42	3288	37 22 16	3283
	Sun E.	70 30 44	3442	69 9 15	3438	67 47 41	3433	66 26 2	3428
19	α Arietis W.	81 20 23	3145	82 47 38	3137	84 15 3	3128	85 42 39	3119
	Aldebaran W.	49 48 45	3012	51 18 43	3004	52 48 51	2996	54 19 9	2987
	Venus E.	23 51 35	3498	22 31 8	3495	21 10 38	3491	19 50 4	3487
	Mars E.	30 18 37	3255	28 53 33	3248	27 28 21	3242	26 3 2	3235
	Sun E.	59 36 8	3395	58 13 46	3388	56 51 16	3379	55 28 36	3372
20	α Arietis W.	93 3 24	3072	94 32 8	3063	96 1 3	3053	97 30 10	3043
	Aldebaran W.	61 53 29	2939	63 24 58	2929	64 56 40	2919	66 28 35	2908
	Sun E.	48 32 52	3326	47 9 11	3317	45 45 19	3307	44 21 16	3298
21	α Arietis W.	104 58 44	2995	106 29 3	2986	107 59 33	2977	109 30 15	2968
	Aldebaran W.	74 11 43	2851	75 45 5	2838	77 18 43	2827	78 52 35	2815
	Pollux W.	30 21 7	2922	31 52 58	2904	33 25 12	2886	34 57 49	2869
	Sun E.	37 18 10	3248	35 52 58	3239	34 27 35	3230	33 2 1	3221
22	Aldebaran W.	86 45 57	2753	88 21 27	2741	89 57 13	2729	91 33 15	2717
	Pollux W.	42 46 10	2790	44 20 51	2775	45 55 52	2761	47 31 11	2748
	Sun E.	25 51 53	3189	24 25 31	3187	22 59 6	3187	21 32 40	3191
26	Sun W.	24 17 58	2821	25 51 59	2802	27 26 24	2786	29 1 10	2772
	Antares E.	41 17 38	2483	39 36 1	2482	37 54 22	2482	36 12 43	2482
	Jupiter E.	62 15 30	2436	60 32 47	2429	58 49 53	2422	57 6 49	2416
	α Aquilæ E.	89 41 14	3079	88 12 39	3073	86 43 57	3069	85 15 10	3066
27	Sun W.	36 59 9	2717	38 35 26	2709	40 11 54	2701	41 48 33	2694
	Antares E.	27 45 40	2518	26 4 52	2535	24 24 27	2557	22 44 33	2585
	Jupiter E.	48 29 18	2387	46 45 24	2381	45 1 22	2377	43 17 14	2372
	α Aquilæ E.	77 50 49	3072	76 22 5	3077	74 53 27	3085	73 24 59	3094
28	Sun W.	49 53 58	2665	51 31 25	2660	53 8 59	2656	54 46 38	2652
	Jupiter E.	34 35 2	2354	32 50 21	2350	31 5 35	2347	29 20 44	2346
	α Aquilæ E.	66 6 10	3170	64 39 25	3192	63 13 6	3216	61 47 16	3245
	Fomalhaut E.	97 13 46	2517	95 32 56	2513	93 52 1	2509	92 11 0	2505
29	Sun W.	62 56 7	2636	64 34 13	2635	66 12 21	2632	67 50 32	2630
	α Aquilæ E.	54 47 36	3438	53 26 2	3490	52 5 27	3549	50 45 57	3612
	Fomalhaut E.	83 45 2	2497	82 3 45	2497	80 22 28	2499	78 41 13	2499
	α Pegasi E.	100 32 8	2715	98 55 48	2710	97 19 21	2705	95 42 48	2701
30	Sun W.	76 2 0	2624	77 40 22	2624	79 18 45	2624	80 57 8	2623
	α Aquilæ E.	44 28 15	4061	43 17 35	4183	42 8 53	4322	41 2 21	4477
	Fomalhaut E.	70 15 35	2515	68 34 42	2520	66 53 56	2525	65 13 18	2532
	α Pegasi E.	87 39 9	2695	86 2 22	2697	84 25 38	2698	82 48 56	2702

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	S. [°] ['] ["]	["]	^m ^s	^m ^s	^s
Tues.	1	12 31 9.58	9.063	S. 3 21 55.4	58.23	1 4.37	10 26.80	0.792
Wed.	2	12 34 47.22	9.075	3 45 11.8	58.13	1 4.41	10 45.66	0.780
Thur.	3	12 38 25.16	9.087	4 8 25.5	58.01	1 4.46	11 4.22	0.767
Frid.	4	12 42 3.41	9.101	4 31 36.2	57.87	1 4.51	11 22.47	0.753
Sat.	5	12 45 42.01	9.116	4 54 43.4	57.72	1 4.57	11 40.38	0.739
Sun.	6	12 49 20.97	9.131	5 17 46.8	57.56	1 4.63	11 57.92	0.723
Mon.	7	12 53 0.32	9.148	5 40 46.1	57.38	1 4.69	12 15.07	0.706
Tues.	8	12 56 40.09	9.166	6 3 41.0	57.19	1 4.75	12 31.82	0.689
Wed.	9	13 0 20.29	9.185	6 26 31.1	56.98	1 4.81	12 48.12	0.670
Thur.	10	13 4 0.95	9.204	6 49 16.0	56.76	1 4.88	13 3.97	0.650
Frid.	11	13 7 42.10	9.225	7 11 55.5	56.52	1 4.96	13 19.33	0.630
Sat.	12	13 11 23.76	9.247	7 34 29.2	56.27	1 5.03	13 34.19	0.608
Sun.	13	13 15 5.95	9.269	7 56 56.7	56.01	1 5.11	13 48.51	0.585
Mon.	14	13 18 48.68	9.292	8 19 17.7	55.73	1 5.19	14 2.29	0.562
Tues.	15	13 22 31.98	9.316	8 41 31.8	55.44	1 5.27	14 15.51	0.539
Wed.	16	13 26 15.86	9.341	9 3 38.6	55.12	1 5.35	14 28.14	0.514
Thur.	17	13 30 0.35	9.367	9 25 37.7	54.80	1 5.44	14 40.18	0.489
Frid.	18	13 33 45.46	9.393	9 47 28.8	54.45	1 5.53	14 51.60	0.463
Sat.	19	13 37 31.20	9.419	10 9 11.4	54.09	1 5.62	15 2.38	0.436
Sun.	20	13 41 17.59	9.447	10 30 45.1	53.71	1 5.71	15 12.51	0.408
Mon.	21	13 45 4.65	9.475	10 52 9.6	53.32	1 5.81	15 21.98	0.380
Tues.	22	13 48 52.39	9.504	11 13 24.5	52.91	1 5.91	15 30.77	0.352
Wed.	23	13 52 40.82	9.533	11 34 29.3	52.48	1 6.01	15 38.87	0.323
Thur.	24	13 56 29.96	9.562	11 55 23.7	52.04	1 6.11	15 46.27	0.293
Frid.	25	14 0 19.81	9.592	12 16 7.2	51.58	1 6.21	15 52.95	0.263
Sat.	26	14 4 10.39	9.623	12 36 39.4	51.10	1 6.32	15 58.91	0.233
Sun.	27	14 8 1.70	9.654	12 56 59.8	50.60	1 6.43	16 4.13	0.202
Mon.	28	14 11 53.76	9.685	13 17 8.1	50.08	1 6.54	16 8.62	0.171
Tues.	29	14 15 46.57	9.716	13 37 3.8	49.55	1 6.65	16 12.36	0.140
Wed.	30	14 19 40.12	9.747	13 56 46.4	48.99	1 6.76	16 15.35	0.109
Thur.	31	14 23 34.44	9.780	14 16 15.5	48.43	1 6.87	16 17.57	0.077
Frid.	32	14 27 29.54	9.812	S. 14 35 30.9	47.84	1 6.99	16 19.03	0.045

* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		h m s	° ' "	' "	m s	h m s
Tues.	1	12 31 11.16	S. 3 22 5.5	16 1.4	10 26.93	12 41 38.09
Wed.	2	12 34 48.85	3 45 22.2	16 1.7	10 45.80	12 45 34.64
Thur.	3	12 38 26.83	4 8 36.2	16 2.0	11 4.36	12 49 31.20
Frid.	4	12 42 5.14	4 31 47.2	16 2.2	11 22.61	12 53 27.75
Sat.	5	12 45 43.78	4 54 54.6	16 2.5	11 40.52	12 57 24.30
Sun.	6	12 49 22.79	5 17 58.3	16 2.8	11 58.06	13 1 20.86
Mon.	7	12 53 2.19	5 40 57.9	16 3.1	12 15.22	13 5 17.41
Tues.	8	12 56 42.00	6 3 53.0	16 3.3	12 31.96	13 9 13.96
Wed.	9	13 0 22.25	6 26 43.2	16 3.6	12 48.27	13 13 10.51
Thur.	10	13 4 2.96	6 49 28.4	16 3.9	13 4.11	13 17 7.07
Frid.	11	13 7 44.15	7 12 8.1	16 4.2	13 19.47	13 21 3.62
Sat.	12	13 11 25.85	7 34 41.9	16 4.5	13 34.32	13 25 0.17
Sun.	13	13 15 8.08	7 57 9.6	16 4.7	13 48.65	13 28 56.73
Mon.	14	13 18 50.85	8 19 30.8	16 5.0	14 2.43	13 32 53.28
Tues.	15	13 22 34.19	8 41 45.0	16 5.3	14 15.64	13 36 49.83
Wed.	16	13 26 18.12	9 3 51.9	16 5.5	14 28.27	13 40 46.39
Thur.	17	13 30 2.64	9 25 51.1	16 5.8	14 40.30	13 44 42.94
Frid.	18	13 33 47.78	9 47 42.2	16 6.1	14 51.71	13 48 39.49
Sat.	19	13 37 33.56	10 9 24.9	16 6.3	15 2.49	13 52 36.05
Sun.	20	13 41 19.99	10 30 58.8	16 6.6	15 12.61	13 56 32.60
Mon.	21	13 45 7.08	10 52 23.3	16 6.8	15 22.08	14 0 29.15
Tues.	22	13 48 54.85	11 13 38.2	16 7.1	15 30.86	14 4 25.71
Wed.	23	13 52 43.31	11 34 43.0	16 7.4	15 38.95	14 8 22.26
Thur.	24	13 56 32.47	11 55 37.4	16 7.7	15 46.34	14 12 18.82
Frid.	25	14 0 22.35	12 16 20.9	16 7.9	15 53.02	14 16 15.37
Sat.	26	14 4 12.95	12 36 53.0	16 8.2	15 58.97	14 20 11.92
Sun.	27	14 8 4.29	12 57 13.4	16 8.4	16 4.19	14 24 8.48
Mon.	28	14 11 56.37	13 17 21.6	16 8.7	16 8.67	14 28 5.03
Tues.	29	14 15 49.19	13 37 17.1	16 9.0	16 12.40	14 32 1.59
Wed.	30	14 19 42.76	13 56 59.7	16 9.2	16 15.38	14 35 58.14
Thur.	31	14 23 37.10	14 16 28.7	16 9.5	16 17.60	14 39 54.70
Frid.	32	14 27 32.21	S. 14 35 43.9	16 9.7	16 19.04	14 43 51.25

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Apparent				Semidiameter.		Horizontal Parallax.	
	Longitude.	Latitude.						
	Noon.	Noon.			Noon.	Noon.	Midnight.	Noon.
1	188° 29' 19".7	S. 0° 15'	0.0001984	11 16 30.78	16' 10".4	16' 10".4	59 15".3	59 15".1
2	189 28 25.4	0.28	0.0000702	11 12 34.87	16 10.0	16 9.3	59 13.8	59 11.3
3	190 27 32.8	0.41	9.9999420	11 8 38.96	16 8.3	16 7.0	59 7.6	59 2.7
4	191 26 41.9	0.53	9.9998140	11 4 43.06	16 5.3	16 3.3	58 56.7	58 49.3
5	192 25 52.8	0.63	.9996863	11 0 47.15	16 0.9	15 58.2	58 40.6	58 30.5
6	193 25 5.4	0.70	.9995590	10 56 51.24	15 55.1	15 51.6	58 19.2	58 6.5
7	194 24 19.9	0.73	9.9994323	10 52 55.33	15 47.8	15 43.7	57 52.5	57 37.4
8	195 23 36.3	0.74	.9993064	10 48 59.43	15 39.3	15 34.7	57 21.4	57 4.5
9	196 22 54.8	0.72	.9991812	10 45 3.52	15 30.0	15 25.1	56 47.1	56 29.3
10	197 22 15.3	0.67	9.9990567	10 41 7.61	15 20.2	15 15.5	56 11.5	55 54.0
11	198 21 38.0	0.60	.9989330	10 37 11.71	15 10.9	15 6.5	55 37.1	55 21.0
12	199 21 3.0	0.51	.9988100	10 33 15.80	15 2.4	14 58.7	55 6.0	54 52.5
13	200 20 30.2	0.40	9.9986878	10 29 19.89	14 55.5	14 52.7	54 40.7	54 30.7
14	201 19 59.7	0.28	.9985662	10 25 23.98	14 50.6	14 49.1	54 22.9	54 17.4
15	202 19 31.5	0.16	.9984452	10 21 28.08	14 48.2	14 48.1	54 14.2	54 13.6
16	203 19 5.5	S. 0° 05'	9.9983248	10 17 32.17	14 48.6	14 49.8	54 15.6	54 20.1
17	204 18 41.8	N. 0° 06'	.9982049	10 13 36.26	14 51.8	14 54.5	54 27.3	54 37.1
18	205 18 20.3	0.16	.9980854	10 9 40.35	14 57.8	15 1.8	54 49.3	55 3.9
19	206 18 1.1	0.25	9.9979663	10 5 44.45	15 6.4	15 11.5	55 20.7	55 39.4
20	207 17 44.2	0.32	.9978475	10 1 48.54	15 17.0	15 22.9	55 59.7	56 21.4
21	208 17 29.4	0.37	.9977288	9 57 52.63	15 29.1	15 35.4	56 44.0	57 7.2
22	209 17 16.7	0.40	9.9976103	9 53 56.72	15 41.8	15 48.0	57 30.4	57 53.2
23	210 17 6.2	0.39	.9974919	9 50 0.82	15 54.0	15 59.6	58 15.1	58 35.7
24	211 16 57.8	0.34	.9973736	9 46 4.91	16 4.7	16 9.3	58 54.5	59 11.1
25	212 16 51.4	0.27	9.9972553	9 42 9.00	16 13.1	16 16.2	59 25.2	59 36.5
26	213 16 46.9	0.18	.9971372	9 38 13.09	16 18.5	16 20.0	59 44.9	59 50.4
27	214 16 44.2	N. 0° 06'	.9970192	9 34 17.18	16 20.7	16 20.6	59 52.9	59 52.6
28	215 16 43.3	S. 0° 08'	9.9969016	9 30 21.27	16 19.8	16 18.4	59 49.8	59 44.6
29	216 16 44.0	0.21	.9967844	9 26 25.37	16 16.4	16 14.0	59 37.4	59 28.5
30	217 16 46.3	0.34	.9966678	9 22 29.46	16 11.2	16 8.0	59 18.1	59 6.6
31	218 16 50.2	0.46	.9965520	9 18 33.55	16 4.6	16 1.1	58 54.2	58 41.1
32	219 16 55.5	S. 0° 56'	9.9964372	9 14 37.64	15 57.4	15 53.6	58 27.5	58 13.6

MEAN TIME.

THE MOON'S

Day of the Month.

	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	271° 5' 8.6"	278° 8' 16.6"	N. 0° 33' 32.8"	S. 0° 3' 43.3"	6.4	5 36.5	18 6.5
2	285 11 13.8	292 13 54.6	S. 0 40 54.9	1 17 27.0	7.4	6 36.5	19 6.3
3	299 16 12.7	306 18 0.7	1 52 45.5	2 26 17.0	8.4	7 35.6	20 4.4
4	313 19 8.4	320 19 23.1	2 57 30.6	3 25 57.7	9.4	8 32.4	20 59.7
5	327 18 28.8	334 16 7.0	3 51 12.9	4 12 54.7	10.4	9 26.1	21 51.9
6	341 11 55.8	348 5 31.9	4 30 45.3	4 44 31.5	11.4	10 17.0	22 41.4
7	354 56 30.4	1 44 27.0	4 54 5.3	4 59 23.2	12.4	11 5.3	23 28.8
8	8 28 57.6	15 9 41.1	5 0 26.7	4 57 20.7	13.4	11 52.0	* *
9	21 46 18.8	28 18 37.5	4 50 15.3	4 39 23.9	14.4	12 37.9	0 15.0
10	34 46 27.5	41 9 45.6	4 25 2.1	4 7 27.9	15.4	13 23.6	1 0.7
11	47 28 33.6	53 42 59.3	3 47 1.3	3 24 2.4	16.4	14 9.8	1 46.7
12	59 53 16.2	65 59 42.5	2 58 51.8	2 31 50.6	17.4	14 56.9	2 33.3
13	72 2 41.5	78 2 40.8	2 3 18.7	1 33 36.2	18.4	15 45.0	3 20.9
14	84 0 11.9	89 55 49.2	1 3 1.9	S. 0 31 54.5	19.4	16 33.9	4 9.4
15	95 50 9.9	101 43 53.3	S. 0 0 31.5	N. 0 30 49.6	20.4	17 23.1	4 58.4
16	107 37 40.2	113 32 11.9	N. 1 1 51.8	1 32 18.3	21.4	18 12.2	5 47.7
17	119 28 10.0	125 26 16.5	2 1 52.3	2 30 16.5	22.4	19 0.8	6 36.6
18	131 27 11.5	137 31 33.2	2 57 13.3	3 22 24.6	23.4	19 48.5	7 24.8
19	143 39 57.9	149 52 57.8	3 45 31.7	4 6 15.4	24.4	20 35.5	8 12.1
20	156 11 0.7	162 34 29.3	4 24 16.1	4 39 14.1	25.4	21 22.0	8 58.8
21	169 3 39.7	175 38 40.8	4 50 50.4	4 58 46.4	26.4	22 8.6	9 45.3
22	182 19 34.3	189 6 12.5	5 2 45.7	5 2 34.1	27.4	22 56.0	10 32.2
23	195 58 20.4	202 55 33.9	4 58 1.4	4 49 1.3	28.4	23 45.1	11 20.3
24	209 57 22.3	217 3 8.2	4 35 33.2	4 17 42.1	29.4	* *	12 10.6
25	224 12 9.4	231 23 40.5	3 55 39.5	3 29 43.0	0.9	0 36.8	13 3.7
26	238 36 55.5	245 51 8.3	3 0 16.5	2 27 49.2	1.9	1 31.5	14 0.1
27	253 5 36.3	260 19 40.0	1 52 54.9	N. 1 16 10.4	2.9	2 29.4	14 59.4
28	267 32 45.5	274 44 23.9	N. 0 38 14.5	S. 0 0 12.6	3.9	3 29.8	16 0.4
29	281 54 12.2	289 1 52.9	S. 0 38 31.7	1 16 4.5	4.9	4 31.0	17 1.3
30	296 7 13.5	303 10 5.2	1 52 15.1	2 26 30.5	5.9	5 31.1	18 0.3
31	310 10 22.9	317 8 3.7	2 58 20.8	3 27 19.6	6.9	6 28.6	18 56.1
32	324 3 5.7	330 55 27.8	S. 3 53 3.9	S. 4 15 15.3	7.9	7 22.6	19 48.4

The Moon's Longitude and Latitude are from HANSEN'S Tables direct; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 1.					THURSDAY 3.				
0	18 4 41.50	25.535	S. 22 53 22.0	28.05	0	20 7 21.36	25.173	S. 22 9 14.3	45.73
1	18 7 14.77	25.553	22 56 5.7	26.52	1	20 9 52.31	25.143	22 4 35.6	47.18
2	18 9 48.14	25.570	22 58 40.2	24.98	2	20 12 23.07	25.110	21 59 48.2	48.61
3	18 12 21.61	25.585	23 1 5.5	23.44	3	20 14 53.63	25.077	21 54 52.3	50.03
4	18 14 55.16	25.598	23 3 21.5	21.90	4	20 17 23.99	25.043	21 49 47.9	51.44
5	18 17 28.79	25.611	23 5 28.3	20.35	5	20 19 54.15	25.009	21 44 35.0	52.85
6	18 20 2.49	25.623	23 7 25.7	18.80	6	20 22 24.10	24.973	21 39 13.7	54.25
7	18 22 36.27	25.635	23 9 13.9	17.25	7	20 24 53.83	24.937	21 33 44.0	55.63
8	18 25 10.11	25.644	23 10 52.7	15.69	8	20 27 23.34	24.900	21 28 6.1	57.01
9	18 27 44.00	25.653	23 12 22.2	14.13	9	20 29 52.63	24.863	21 22 19.9	58.38
10	18 30 17.95	25.662	23 13 42.3	12.58	10	20 32 21.70	24.826	21 16 25.5	59.74
11	18 32 51.94	25.668	23 14 53.1	11.01	11	20 34 50.54	24.787	21 10 23.0	61.08
12	18 35 25.97	25.674	23 15 54.4	9.44	12	20 37 19.14	24.748	21 4 12.5	62.42
13	18 38 0.03	25.678	23 16 46.4	7.88	13	20 39 47.51	24.708	20 57 54.0	63.75
14	18 40 34.11	25.682	23 17 28.9	6.31	14	20 42 15.63	24.667	20 51 27.5	65.08
15	18 43 8.21	25.684	23 18 2.1	4.74	15	20 44 43.51	24.626	20 44 53.1	66.38
16	18 45 42.32	25.685	23 18 25.8	3.17	16	20 47 11.14	24.584	20 38 10.9	67.68
17	18 48 16.43	25.685	23 18 40.1	1.60	17	20 49 38.52	24.543	20 31 21.0	68.97
18	18 50 50.54	25.685	23 18 45.0	0.03	18	20 52 5.65	24.500	20 24 23.3	70.24
19	18 53 24.65	25.683	23 18 40.4	1.54	19	20 54 32.52	24.457	20 17 18.1	71.50
20	18 55 58.74	25.679	23 18 26.5	3.10	20	20 56 59.13	24.413	20 10 5.3	72.76
21	18 58 32.80	25.675	23 18 3.2	4.68	21	20 59 25.48	24.369	20 2 45.0	74.01
22	19 1 6.84	25.671	23 17 30.4	6.24	22	21 1 51.56	24.325	19 55 17.2	75.23
23	19 3 40.85	25.664	S. 23 16 48.3	7.81	23	21 4 17.38	24.281	S. 19 47 42.2	76.45
WEDNESDAY 2.					FRIDAY 4.				
0	19 6 14.81	25.657	S. 23 15 56.7	9.38	0	21 6 42.93	24.236	S. 19 39 59.8	77.67
1	19 8 48.73	25.648	23 14 55.8	10.93	1	21 9 8.21	24.190	19 32 10.2	78.86
2	19 11 22.59	25.638	23 13 45.5	12.50	2	21 11 33.21	24.144	19 24 13.5	80.03
3	19 13 56.39	25.628	23 12 25.8	14.05	3	21 13 57.94	24.098	19 16 9.8	81.20
4	19 16 30.12	25.616	23 10 56.9	15.60	4	21 16 22.39	24.052	19 7 59.1	82.37
5	19 19 3.78	25.603	23 9 18.6	17.16	5	21 18 46.56	24.005	18 59 41.4	83.52
6	19 21 37.36	25.590	23 7 31.0	18.71	6	21 21 10.45	23.958	18 51 16.9	84.65
7	19 24 10.86	25.575	23 5 34.1	20.26	7	21 23 34.06	23.912	18 42 45.6	85.77
8	19 26 44.26	25.558	23 3 27.9	21.79	8	21 25 57.39	23.864	18 34 7.7	86.88
9	19 29 17.56	25.542	23 1 12.6	23.33	9	21 28 20.43	23.817	18 25 23.1	87.98
10	19 31 50.77	25.525	22 58 48.0	24.87	10	21 30 43.19	23.769	18 16 32.0	89.06
11	19 34 23.86	25.505	22 56 14.2	26.39	11	21 33 5.66	23.721	18 7 34.4	90.13
12	19 36 56.83	25.485	22 53 31.3	27.91	12	21 35 27.84	23.673	17 58 30.4	91.19
13	19 39 29.68	25.465	22 50 39.3	29.43	13	21 37 49.73	23.625	17 49 20.1	92.23
14	19 42 2.41	25.443	22 47 38.1	30.95	14	21 40 11.34	23.577	17 40 3.6	93.27
15	19 44 35.00	25.420	22 44 27.9	32.45	15	21 42 32.66	23.528	17 30 40.9	94.28
16	19 47 7.45	25.396	22 41 8.7	33.95	16	21 44 53.68	23.480	17 21 12.2	95.28
17	19 49 39.75	25.372	22 37 40.5	35.45	17	21 47 14.42	23.432	17 11 37.5	96.28
18	19 52 11.91	25.346	22 34 3.3	36.94	18	21 49 34.86	23.383	17 1 56.8	97.27
19	19 54 43.90	25.319	22 30 17.2	38.43	19	21 51 55.02	23.335	16 52 10.3	98.23
20	19 57 15.74	25.292	22 26 22.2	39.91	20	21 54 14.88	23.287	16 42 18.1	99.18
21	19 59 47.41	25.264	22 22 18.3	41.38	21	21 56 34.46	23.238	16 32 20.2	100.12
22	20 2 18.91	25.235	22 18 5.7	42.83	22	21 58 53.74	23.189	16 22 16.7	101.04
23	20 4 50.23	25.204	22 13 44.3	44.28	23	22 1 12.73	23.141	16 12 7.7	101.96
24	20 7 21.36	25.173	S. 22 9 14.3	45.73	24	22 3 31.43	23.093	S. 16 1 53.2	102.86

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 5.					MONDAY 7.				
0	22 3 31 ^h 43 ^m	23 ^s 093	S. 16 1 53 ^h 2 ^m	102 ^s 86	0	23 49 13 ^h 97 ^m	21 ^s 086	S. 6 30 36 ^h 5 ^m	130 ^s 00
1	22 5 49 ^h 84 ^m	23 ^s 045	15 51 33 ^h 4 ^m	103 ^s 74	1	23 51 20 ^h 39 ^m	21 ^s 055	6 17 35 ^h 8 ^m	130 ^s 23
2	22 8 7 ^h 97 ^m	22 ^s 998	15 41 8 ^h 3 ^m	104 ^s 62	2	23 53 26 ^h 63 ^m	21 ^s 023	6 4 33 ^h 7 ^m	130 ^s 47
3	22 10 25 ^h 81 ^m	22 ^s 949	15 30 38 ^h 0 ^m	105 ^s 47	3	23 55 32 ^h 67 ^m	20 ^s 993	5 51 30 ^h 2 ^m	130 ^s 68
4	22 12 43 ^h 36 ^m	22 ^s 901	15 20 2 ^h 7 ^m	106 ^s 31	4	23 57 38 ^h 54 ^m	20 ^s 963	5 38 25 ^h 5 ^m	130 ^s 88
5	22 15 0 ^h 62 ^m	22 ^s 853	15 9 22 ^h 3 ^m	107 ^s 15	5	23 59 44 ^h 23 ^m	20 ^s 933	5 25 19 ^h 6 ^m	131 ^s 08
6	22 17 17 ^h 60 ^m	22 ^s 806	14 58 36 ^h 9 ^m	107 ^s 97	6	0 1 49 ^h 73 ^m	20 ^s 903	5 12 12 ^h 6 ^m	131 ^s 25
7	22 19 34 ^h 29 ^m	22 ^s 758	14 47 46 ^h 7 ^m	108 ^s 77	7	0 3 55 ^h 07 ^m	20 ^s 876	4 59 4 ^h 6 ^m	131 ^s 44
8	22 21 50 ^h 79 ^m	22 ^s 711	14 36 51 ^h 7 ^m	109 ^s 55	8	0 6 0 ^h 24 ^m	20 ^s 847	4 45 55 ^h 6 ^m	131 ^s 58
9	22 24 6 ^h 82 ^m	22 ^s 663	14 25 52 ^h 1 ^m	110 ^s 33	9	0 8 5 ^h 23 ^m	20 ^s 819	4 32 45 ^h 7 ^m	131 ^s 72
10	22 26 22 ^h 66 ^m	22 ^s 617	14 14 47 ^h 8 ^m	111 ^s 09	10	0 10 10 ^h 07 ^m	20 ^s 793	4 19 35 ^h 0 ^m	131 ^s 84
11	22 28 38 ^h 23 ^m	22 ^s 571	14 3 ^h 39 ^m 0 ^s	111 ^s 84	11	0 12 14 ^h 74 ^m	20 ^s 765	4 6 23 ^h 6 ^m	131 ^s 96
12	22 30 53 ^h 51 ^m	22 ^s 523	13 52 25 ^h 7 ^m	112 ^s 58	12	0 14 19 ^h 25 ^m	20 ^s 739	3 53 11 ^h 5 ^m	132 ^s 07
13	22 33 8 ^h 51 ^m	22 ^s 477	13 41 8 ^h 1 ^m	113 ^s 29	13	0 16 23 ^h 61 ^m	20 ^s 714	3 39 58 ^h 8 ^m	132 ^s 16
14	22 35 23 ^h 24 ^m	22 ^s 432	13 29 46 ^h 2 ^m	113 ^s 99	14	0 18 27 ^h 82 ^m	20 ^s 689	3 26 45 ^h 6 ^m	132 ^s 23
15	22 37 37 ^h 69 ^m	22 ^s 386	13 18 20 ^h 2 ^m	114 ^s 68	15	0 20 31 ^h 88 ^m	20 ^s 664	3 13 32 ^h 0 ^m	132 ^s 31
16	22 39 51 ^h 87 ^m	22 ^s 340	13 6 50 ^h 0 ^m	115 ^s 37	16	0 22 35 ^h 79 ^m	20 ^s 641	3 0 17 ^h 9 ^m	132 ^s 37
17	22 42 5 ^h 72 ^m	22 ^s 295	12 55 15 ^h 8 ^m	116 ^s 03	17	0 24 39 ^h 57 ^m	20 ^s 618	2 47 3 ^h 6 ^m	132 ^s 41
18	22 44 19 ^h 41 ^m	22 ^s 251	12 43 37 ^h 6 ^m	116 ^s 69	18	0 26 43 ^h 20 ^m	20 ^s 594	2 33 49 ^h 0 ^m	132 ^s 45
19	22 46 32 ^h 78 ^m	22 ^s 206	12 31 55 ^h 5 ^m	117 ^s 33	19	0 28 46 ^h 70 ^m	20 ^s 572	2 20 34 ^h 2 ^m	132 ^s 48
20	22 48 45 ^h 88 ^m	22 ^s 162	12 20 9 ^h 7 ^m	117 ^s 95	20	0 30 50 ^h 06 ^m	20 ^s 549	2 7 19 ^h 3 ^m	132 ^s 49
21	22 50 58 ^h 72 ^m	22 ^s 118	12 8 20 ^h 1 ^m	118 ^s 57	21	0 32 53 ^h 29 ^m	20 ^s 528	1 54 4 ^h 3 ^m	132 ^s 49
22	22 53 11 ^h 29 ^m	22 ^s 074	11 56 26 ^h 9 ^m	119 ^s 16	22	0 34 56 ^h 40 ^m	20 ^s 508	1 40 49 ^h 4 ^m	132 ^s 48
23	22 55 23 ^h 61 ^m	22 ^s 031	S. 11 44 30 ^h 2 ^m	119 ^s 74	23	0 36 59 ^h 39 ^m	20 ^s 488	S. 1 27 34 ^h 6 ^m	132 ^s 45
SUNDAY 6.					TUESDAY 8.				
0	22 57 35 ^h 66 ^m	21 ^s 988	S. 11 32 30 ^h 0 ^m	120 ^s 32	0	0 39 2 ^h 25 ^m	20 ^s 468	S. 1 14 20 ^h 0 ^m	132 ^s 42
1	22 59 47 ^h 46 ^m	21 ^s 946	11 20 26 ^h 4 ^m	120 ^s 87	1	0 41 5 ^h 00 ^m	20 ^s 448	1 1 5 ^h 6 ^m	132 ^s 38
2	23 1 59 ^h 01 ^m	21 ^s 904	11 8 19 ^h 6 ^m	121 ^s 41	2	0 43 7 ^h 63 ^m	20 ^s 429	0 47 51 ^h 5 ^m	132 ^s 32
3	23 4 10 ^h 31 ^m	21 ^s 863	10 56 9 ^h 5 ^m	121 ^s 94	3	0 45 10 ^h 15 ^m	20 ^s 411	0 34 37 ^h 8 ^m	132 ^s 24
4	23 6 21 ^h 36 ^m	21 ^s 822	10 43 56 ^h 3 ^m	122 ^s 46	4	0 47 12 ^h 56 ^m	20 ^s 393	0 21 24 ^h 6 ^m	132 ^s 17
5	23 8 32 ^h 17 ^m	21 ^s 781	10 31 40 ^h 0 ^m	122 ^s 96	5	0 49 14 ^h 87 ^m	20 ^s 377	S. 0 8 11 ^h 8 ^m	132 ^s 08
6	23 10 42 ^h 73 ^m	21 ^s 740	10 19 20 ^h 8 ^m	123 ^s 45	6	0 51 17 ^h 08 ^m	20 ^s 359	N. 0 5 0 ^h 4 ^m	131 ^s 98
7	23 12 53 ^h 05 ^m	21 ^s 700	10 6 58 ^h 6 ^m	123 ^s 93	7	0 53 19 ^h 18 ^m	20 ^s 343	0 18 12 ^h 0 ^m	131 ^s 87
8	23 15 3 ^h 13 ^m	21 ^s 660	9 54 33 ^h 6 ^m	124 ^s 39	8	0 55 21 ^h 20 ^m	20 ^s 328	0 31 22 ^h 8 ^m	131 ^s 74
9	23 17 12 ^h 97 ^m	21 ^s 620	9 42 5 ^h 9 ^m	124 ^s 83	9	0 57 23 ^h 12 ^m	20 ^s 313	0 44 32 ^h 9 ^m	131 ^s 62
10	23 19 22 ^h 57 ^m	21 ^s 582	9 29 35 ^h 6 ^m	125 ^s 28	10	0 59 24 ^h 95 ^m	20 ^s 298	0 57 42 ^h 2 ^m	131 ^s 47
11	23 21 31 ^h 95 ^m	21 ^s 543	9 17 2 ^h 6 ^m	125 ^s 70	11	1 1 26 ^h 69 ^m	20 ^s 284	1 10 50 ^h 5 ^m	131 ^s 31
12	23 23 41 ^h 09 ^m	21 ^s 505	9 4 27 ^h 2 ^m	126 ^s 10	12	1 3 28 ^h 36 ^m	20 ^s 271	1 23 57 ^h 9 ^m	131 ^s 15
13	23 25 50 ^h 01 ^m	21 ^s 468	8 51 49 ^h 4 ^m	126 ^s 50	13	1 5 29 ^h 94 ^m	20 ^s 258	1 37 4 ^h 3 ^m	130 ^s 98
14	23 27 58 ^h 70 ^m	21 ^s 431	8 39 9 ^h 2 ^m	126 ^s 88	14	1 7 31 ^h 45 ^m	20 ^s 246	1 50 9 ^h 6 ^m	130 ^s 78
15	23 30 7 ^h 18 ^m	21 ^s 394	8 26 26 ^h 8 ^m	127 ^s 25	15	1 9 32 ^h 89 ^m	20 ^s 233	2 3 13 ^h 7 ^m	130 ^s 58
16	23 32 15 ^h 43 ^m	21 ^s 358	8 13 42 ^h 2 ^m	127 ^s 60	16	1 11 34 ^h 25 ^m	20 ^s 222	2 16 16 ^h 6 ^m	130 ^s 38
17	23 34 23 ^h 47 ^m	21 ^s 323	8 0 55 ^h 6 ^m	127 ^s 94	17	1 13 35 ^h 55 ^m	20 ^s 211	2 29 18 ^h 2 ^m	130 ^s 16
18	23 36 31 ^h 30 ^m	21 ^s 288	7 48 6 ^h 9 ^m	128 ^s 28	18	1 15 36 ^h 78 ^m	20 ^s 200	2 42 18 ^h 5 ^m	129 ^s 93
19	23 38 38 ^h 92 ^m	21 ^s 253	7 35 16 ^h 2 ^m	128 ^s 60	19	1 17 37 ^h 95 ^m	20 ^s 190	2 55 17 ^h 4 ^m	129 ^s 69
20	23 40 46 ^h 33 ^m	21 ^s 218	7 22 23 ^h 7 ^m	128 ^s 90	20	1 19 39 ^h 06 ^m	20 ^s 181	3 8 14 ^h 8 ^m	129 ^s 44
21	23 42 53 ^h 54 ^m	21 ^s 185	7 9 29 ^h 4 ^m	129 ^s 19	21	1 21 40 ^h 12 ^m	20 ^s 173	3 21 10 ^h 7 ^m	129 ^s 18
22	23 45 0 ^h 55 ^m	21 ^s 152	6 56 33 ^h 4 ^m	129 ^s 47	22	1 23 41 ^h 13 ^m	20 ^s 163	3 34 5 ^h 0 ^m	128 ^s 92
23	23 47 7 ^h 36 ^m	21 ^s 118	6 43 35 ^h 8 ^m	129 ^s 74	23	1 25 42 ^h 08 ^m	20 ^s 155	3 46 57 ^h 7 ^m	128 ^s 64
24	23 49 13 ^h 97 ^m	21 ^s 086	S. 6 30 36 ^h 5 ^m	130 ^s 00	24	1 27 42 ^h 99 ^m	20 ^s 148	N. 3 59 48 ^h 7 ^m	128 ^s 35

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 9.					FRIDAY 11.				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	1 27 42.99	20.148	N. 3 59 48.7	128.35	0	3 4 23.59	20.281	N. 13 25 19.5	104.05
1	1 29 43.86	20.142	4 12 37.9	128.05	1	3 6 25.31	20.293	13 35 41.7	103.34
2	1 31 44.69	20.134	4 25 25.3	127.74	2	3 8 27.10	20.303	13 45 59.6	102.63
3	1 33 45.47	20.128	4 38 10.8	127.43	3	3 10 28.95	20.315	13 56 13.3	101.92
4	1 35 46.23	20.123	4 50 54.4	127.10	4	3 12 30.88	20.327	14 6 22.6	101.15
5	1 37 46.95	20.118	5 3 36.0	126.77	5	3 14 32.87	20.338	14 16 27.6	100.47
6	1 39 47.64	20.113	5 16 15.6	126.42	6	3 16 34.94	20.352	14 26 28.2	99.73
7	1 41 48.31	20.109	5 28 53.0	126.06	7	3 18 37.09	20.364	14 36 24.4	98.99
8	1 43 48.95	20.105	5 41 28.3	125.70	8	3 20 39.31	20.376	14 46 16.1	98.24
9	1 45 49.57	20.102	5 54 1.4	125.32	9	3 22 41.60	20.388	14 56 3.3	97.48
10	1 47 50.17	20.099	6 6 32.2	124.93	10	3 24 43.97	20.402	15 5 45.9	96.73
11	1 49 50.76	20.097	6 19 0.6	124.54	11	3 26 46.43	20.416	15 15 24.0	95.95
12	1 51 51.33	20.094	6 31 26.7	124.14	12	3 28 48.96	20.429	15 24 57.3	95.17
13	1 53 51.89	20.093	6 43 50.3	123.73	13	3 30 51.58	20.443	15 34 26.0	94.40
14	1 55 52.44	20.092	6 56 11.5	123.32	14	3 32 54.28	20.457	15 43 50.1	93.62
15	1 57 52.99	20.092	7 8 30.1	122.88	15	3 34 57.06	20.470	15 53 9.4	92.82
16	1 59 53.54	20.091	7 20 46.1	122.44	16	3 36 59.92	20.484	16 2 23.9	92.02
17	2 1 54.08	20.091	7 32 59.4	121.99	17	3 39 2.87	20.499	16 11 33.6	91.21
18	2 3 54.63	20.092	7 45 10.0	121.54	18	3 41 5.91	20.513	16 20 38.4	90.39
19	2 5 55.18	20.093	7 57 17.9	121.08	19	3 43 9.03	20.528	16 29 38.3	89.58
20	2 7 55.74	20.094	8 9 23.0	120.61	20	3 45 12.24	20.543	16 38 33.3	88.76
21	2 9 56.31	20.096	8 21 25.2	120.13	21	3 47 15.54	20.558	16 47 23.4	87.93
22	2 11 56.89	20.098	8 33 24.5	119.63	22	3 49 18.93	20.572	16 56 8.5	87.09
23	2 13 57.49	20.101	N. 8 45 20.8	119.13	23	3 51 22.40	20.587	N. 17 4 48.5	86.24
THURSDAY 10.					SATURDAY 12.				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	2 15 58.10	20.103	N. 8 57 14.0	118.62	0	3 53 25.97	20.603	N. 17 13 23.4	85.39
1	2 17 58.73	20.107	9 9 4.2	118.11	1	3 55 29.63	20.618	17 21 53.2	84.54
2	2 19 59.39	20.112	9 20 51.3	117.58	2	3 57 33.38	20.633	17 30 17.9	83.68
3	2 22 0.07	20.115	9 32 35.2	117.05	3	3 59 37.22	20.648	17 38 37.4	82.82
4	2 24 0.77	20.120	9 44 15.9	116.51	4	4 1 41.15	20.663	17 46 51.7	81.94
5	2 26 1.51	20.125	9 55 53.3	115.96	5	4 3 45.18	20.678	17 55 0.7	81.07
6	2 28 2.27	20.130	10 7 27.4	115.40	6	4 5 49.29	20.693	18 3 4.5	80.19
7	2 30 3.07	20.136	10 18 58.1	114.84	7	4 7 53.50	20.710	18 11 3.0	79.31
8	2 32 3.90	20.142	10 30 25.5	114.27	8	4 9 57.81	20.725	18 18 56.2	78.41
9	2 34 4.77	20.148	10 41 49.3	113.68	9	4 12 2.20	20.740	18 26 43.9	77.51
10	2 36 5.68	20.155	10 53 9.6	113.09	10	4 14 6.69	20.756	18 34 26.3	76.62
11	2 38 6.63	20.163	11 4 26.4	112.50	11	4 16 11.27	20.772	18 42 3.3	75.70
12	2 40 7.63	20.170	11 15 39.6	111.89	12	4 18 15.95	20.788	18 49 34.7	74.78
13	2 42 8.67	20.177	11 26 49.1	111.28	13	4 20 20.72	20.803	18 57 0.7	73.88
14	2 44 9.75	20.185	11 37 54.9	110.65	14	4 22 25.59	20.818	19 4 21.2	72.95
15	2 46 10.89	20.193	11 48 56.9	110.03	15	4 24 30.54	20.833	19 11 36.1	72.02
16	2 48 12.07	20.202	11 59 55.2	109.39	16	4 26 35.59	20.850	19 18 45.4	71.09
17	2 50 13.31	20.211	12 10 49.6	108.75	17	4 28 40.74	20.865	19 25 49.2	70.16
18	2 52 14.60	20.220	12 21 40.2	108.10	18	4 30 45.97	20.880	19 32 47.3	69.21
19	2 54 15.95	20.230	12 32 26.8	107.43	19	4 32 51.30	20.896	19 39 39.7	68.26
20	2 56 17.36	20.239	12 43 9.4	106.78	20	4 34 56.72	20.912	19 46 26.4	67.31
21	2 58 18.82	20.249	12 53 48.1	106.10	21	4 37 2.24	20.927	19 53 7.4	66.36
22	3 0 20.35	20.260	13 4 22.6	105.42	22	4 39 7.84	20.942	19 59 42.7	65.40
23	3 2 21.94	20.270	13 14 53.1	104.74	23	4 41 13.54	20.958	20 6 12.2	64.43
24	3 4 23.59	20.281	N. 13 25 19.5	104.05	24	4 43 19.33	20.973	N. 20 12 35.9	63.47

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 13.					TUESDAY 15.				
	h m s	s	N. O. I. N.	"		h m s	s	N. O. I. N.	"
0	4 43 19.33	20.973	N. 20 12 35.9	63.47	0	6 25 24.59	21.473	N. 23 18 56.4	13.17
1	4 45 25.21	20.988	20 18 53.8	62.49	1	6 27 33.44	21.478	23 20 12.1	12.07
2	4 47 31.18	21.002	20 25 5.8	61.51	2	6 29 42.32	21.482	23 21 21.2	10.97
3	4 49 37.23	21.017	20 31 11.9	60.53	3	6 31 51.22	21.484	23 22 23.7	9.87
4	4 51 43.38	21.032	20 37 12.1	59.54	4	6 34 0.13	21.487	23 23 19.6	8.77
5	4 53 49.61	21.046	20 43 6.4	58.56	5	6 36 9.06	21.489	23 24 8.9	7.67
6	4 55 55.93	21.061	20 48 54.8	57.56	6	6 38 18.00	21.491	23 24 51.6	6.57
7	4 58 2.34	21.075	20 54 37.1	56.56	7	6 40 26.95	21.493	23 25 27.7	5.47
8	5 0 8.83	21.089	21 0 13.5	55.57	8	6 42 35.92	21.495	23 25 57.2	4.37
9	5 2 15.41	21.103	21 5 43.9	54.56	9	6 44 44.89	21.495	23 26 20.1	3.26
10	5 4 22.07	21.117	21 11 8.2	53.54	10	6 46 53.86	21.497	23 26 36.3	2.16
11	5 6 28.81	21.130	21 16 26.4	52.53	11	6 49 2.85	21.498	23 26 46.0	1.06
12	5 8 35.63	21.143	21 21 38.6	51.53	12	6 51 11.83	21.498	23 26 49.0	0.05
13	5 10 42.53	21.158	21 26 44.7	50.50	13	6 53 20.82	21.498	23 26 45.4	1.15
14	5 12 49.52	21.171	21 31 44.6	49.48	14	6 55 29.80	21.497	23 26 35.2	2.26
15	5 14 56.58	21.183	21 36 38.4	48.45	15	6 57 38.78	21.496	23 26 18.3	3.37
16	5 17 3.72	21.196	21 41 26.0	47.43	16	6 59 47.75	21.494	23 25 54.8	4.47
17	5 19 10.93	21.208	21 46 7.5	46.39	17	7 1 56.71	21.493	23 25 24.7	5.57
18	5 21 18.22	21.221	21 50 42.7	45.35	18	7 4 5.66	21.492	23 24 48.0	6.67
19	5 23 25.58	21.233	21 55 11.7	44.32	19	7 6 14.61	21.489	23 24 4.7	7.77
20	5 25 33.02	21.246	21 59 34.5	43.28	20	7 8 23.53	21.486	23 23 14.8	8.88
21	5 27 40.53	21.258	22 3 51.0	42.23	21	7 10 32.44	21.484	23 22 18.2	9.98
22	5 29 48.11	21.268	22 8 1.2	41.18	22	7 12 41.34	21.481	23 21 15.1	11.08
23	5 31 55.75	21.280	N. 22 12 5.1	40.13	23	7 14 50.21	21.477	N. 23 20 5.3	12.18
MONDAY 14.					WEDNESDAY 16.				
	h m s	s	N. 22 16 2.7	39.08		h m s	s	N. 23 18 49.0	13.27
0	5 34 3.47	21.292	N. 22 16 2.7	39.08	0	7 16 59.06	21.473	N. 23 18 49.0	13.27
1	5 36 11.25	21.303	22 19 54.0	38.02	1	7 19 7.89	21.469	23 17 26.1	14.37
2	5 38 19.10	21.313	22 23 38.9	36.96	2	7 21 16.69	21.464	23 15 56.6	15.47
3	5 40 27.00	21.323	22 27 17.5	35.90	3	7 23 25.46	21.460	23 14 20.5	16.57
4	5 42 34.97	21.333	22 30 49.7	34.83	4	7 25 34.21	21.455	23 12 37.8	17.66
5	5 44 43.00	21.343	22 34 15.5	33.77	5	7 27 42.92	21.449	23 10 48.6	18.75
6	5 46 51.08	21.353	22 37 34.9	32.70	6	7 29 51.60	21.444	23 8 52.8	19.85
7	5 48 59.23	21.362	22 40 47.9	31.63	7	7 32 0.25	21.438	23 6 50.4	20.94
8	5 51 7.42	21.370	22 43 54.5	30.56	8	7 34 8.86	21.432	23 4 41.5	22.03
9	5 53 15.67	21.380	22 46 54.6	29.48	9	7 36 17.43	21.425	23 2 26.1	23.11
10	5 55 23.98	21.388	22 49 48.3	28.41	10	7 38 25.96	21.418	23 0 4.2	24.20
11	5 57 32.33	21.396	22 52 35.5	27.33	11	7 40 34.45	21.412	22 57 35.7	25.29
12	5 59 40.73	21.404	22 55 16.2	26.25	12	7 42 42.90	21.404	22 55 0.7	26.38
13	6 1 49.18	21.412	22 57 50.5	25.17	13	7 44 51.30	21.396	22 52 19.2	27.46
14	6 3 57.67	21.418	23 0 18.2	24.08	14	7 46 59.65	21.388	22 49 31.2	28.53
15	6 6 6.20	21.425	23 2 39.4	23.00	15	7 49 7.96	21.381	22 46 36.8	29.61
16	6 8 14.77	21.432	23 4 54.2	21.92	16	7 51 16.22	21.372	22 43 35.9	30.69
17	6 10 23.38	21.438	23 7 2.4	20.83	17	7 53 24.42	21.363	22 40 28.5	31.77
18	6 12 32.03	21.444	23 9 4.1	19.73	18	7 55 32.57	21.354	22 37 14.7	32.83
19	6 14 40.71	21.450	23 10 59.2	18.64	19	7 57 40.67	21.346	22 33 54.5	33.91
20	6 16 49.43	21.456	23 12 47.8	17.55	20	7 59 48.72	21.337	22 30 27.8	34.98
21	6 18 58.18	21.460	23 14 29.8	16.45	21	8 1 56.71	21.327	22 26 54.7	36.05
22	6 21 6.95	21.465	23 16 5.2	15.36	22	8 4 4.64	21.317	22 23 15.2	37.11
23	6 23 15.76	21.470	23 17 34.1	14.27	23	8 6 12.51	21.307	22 19 29.4	38.17
24	6 25 24.59	21.473	N. 23 18 56.4	13.17	24	8 8 20.32	21.297	N. 22 15 37.2	39.23

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 17.					SATURDAY 19.				
0	8 8 20.32	21.297	N.22 15 37.2	39.23	0	9 49 8.25	20.688	N.17 11 7.9	86.17
1	8 10 28.07	21.287	22 11 38.6	40.29	1	9 51 12.34	20.676	17 2 28.3	87.04
2	8 12 35.76	21.276	22 7 33.7	41.34	2	9 53 16.36	20.663	16 53 43.4	87.92
3	8 14 43.38	21.264	22 3 22.5	42.40	3	9 55 20.30	20.651	16 44 53.3	88.78
4	8 16 50.93	21.253	21 59 4.9	43.45	4	9 57 24.17	20.640	16 35 58.1	89.63
5	8 18 58.42	21.243	21 54 41.1	44.49	5	9 59 27.98	20.629	16 26 57.8	90.48
6	8 21 5.84	21.231	21 50 11.0	45.53	6	10 1 31.72	20.617	16 17 58.4	91.33
7	8 23 13.19	21.220	21 45 34.7	46.58	7	10 3 35.38	20.605	16 8 41.9	92.17
8	8 25 20.48	21.208	21 40 52.1	47.63	8	10 5 38.98	20.595	15 59 26.4	93.00
9	8 27 27.69	21.196	21 36 3.2	48.66	9	10 7 42.52	20.585	15 50 5.9	93.83
10	8 29 34.83	21.183	21 31 8.2	49.68	10	10 9 46.00	20.574	15 40 40.4	94.66
11	8 31 41.89	21.172	21 26 7.0	50.72	11	10 11 49.41	20.563	15 31 10.0	95.48
12	8 33 48.89	21.160	21 20 59.6	51.74	12	10 13 52.75	20.553	15 21 34.7	96.29
13	8 35 55.81	21.147	21 15 46.1	52.77	13	10 15 56.04	20.543	15 11 54.5	97.09
14	8 38 2.65	21.134	21 10 26.4	53.79	14	10 17 59.27	20.533	15 2 9.6	97.89
15	8 40 9.42	21.122	21 5 0.6	54.81	15	10 20 2.44	20.524	14 52 19.8	98.70
16	8 42 16.12	21.109	20 59 28.7	55.83	16	10 22 5.56	20.515	14 42 25.2	99.48
17	8 44 22.73	21.096	20 53 50.7	56.83	17	10 24 8.62	20.506	14 32 26.0	100.26
18	8 46 29.27	21.083	20 48 6.7	57.83	18	10 26 11.63	20.498	14 22 22.1	101.04
19	8 48 35.73	21.070	20 42 16.7	58.84	19	10 28 14.59	20.489	14 12 13.5	101.82
20	8 50 42.11	21.057	20 36 20.6	59.84	20	10 30 17.50	20.482	14 2 0.3	102.58
21	8 52 48.41	21.043	20 30 18.6	60.83	21	10 32 20.37	20.474	13 51 42.5	103.34
22	8 54 54.63	21.030	20 24 10.6	61.83	22	10 34 23.19	20.466	13 41 20.2	104.09
23	8 57 0.77	21.017	N.20 17 56.7	62.82	23	10 36 25.96	20.458	N.13 30 53.4	104.83
FRIDAY 18.					SUNDAY 20.				
0	8 59 6.83	21.003	N.20 11 36.8	63.81	0	10 38 28.69	20.452	N.13 20 22.2	105.58
1	9 1 12.81	20.990	20 5 11.0	64.78	1	10 40 31.38	20.445	13 9 46.5	106.31
2	9 3 18.71	20.977	19 58 39.4	65.76	2	10 42 34.03	20.439	12 59 6.5	107.03
3	9 5 24.53	20.963	19 52 1.9	66.73	3	10 44 36.65	20.433	12 48 22.1	107.76
4	9 7 30.27	20.950	19 45 18.6	67.70	4	10 46 39.22	20.427	12 37 33.4	108.47
5	9 9 35.93	20.937	19 38 29.5	68.67	5	10 48 41.77	20.422	12 26 40.5	109.18
6	9 11 41.51	20.923	19 31 34.6	69.63	6	10 50 44.29	20.417	12 15 43.3	109.88
7	9 13 47.01	20.909	19 24 33.9	70.58	7	10 52 46.77	20.412	12 4 42.0	110.57
8	9 15 52.42	20.895	19 17 27.6	71.53	8	10 54 49.23	20.408	11 53 36.5	111.25
9	9 17 57.75	20.883	19 10 15.5	72.49	9	10 56 51.67	20.404	11 42 27.0	111.93
10	9 20 3.01	20.869	19 2 57.7	73.43	10	10 58 54.08	20.400	11 31 13.4	112.60
11	9 22 8.18	20.855	18 55 34.3	74.37	11	11 0 56.47	20.397	11 19 55.8	113.27
12	9 24 13.27	20.842	18 48 5.3	75.31	12	11 2 58.84	20.394	11 8 34.2	113.93
13	9 26 18.28	20.828	18 40 30.6	76.24	13	11 5 1.20	20.392	10 57 8.7	114.57
14	9 28 23.21	20.816	18 32 50.4	77.16	14	11 7 3.54	20.389	10 45 39.4	115.21
15	9 30 28.07	20.803	18 25 4.7	78.08	15	11 9 5.87	20.388	10 34 6.2	115.85
16	9 32 32.84	20.789	18 17 13.4	79.01	16	11 11 8.20	20.387	10 22 29.2	116.48
17	9 34 37.54	20.776	18 9 16.6	79.93	17	11 13 10.51	20.385	10 10 48.5	117.09
18	9 36 42.15	20.763	18 1 14.3	80.83	18	11 15 12.82	20.385	9 59 4.1	117.71
19	9 38 46.69	20.751	17 53 6.7	81.73	19	11 17 15.13	20.385	9 47 16.0	118.32
20	9 40 51.16	20.738	17 44 53.6	82.63	20	11 19 17.44	20.385	9 35 24.3	118.91
21	9 42 55.54	20.724	17 36 35.2	83.52	21	11 21 19.75	20.386	9 23 29.1	119.49
22	9 44 59.85	20.713	17 28 11.4	84.41	22	11 23 22.07	20.388	9 11 30.4	120.08
23	9 47 4.09	20.700	17 19 42.3	85.29	23	11 25 24.40	20.388	8 59 28.2	120.65
24	9 49 8.25	20.688	N.17 11 7.9	86.17	24	11 27 26.73	20.390	N. 8 47 22.6	121.22

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 21.					WEDNESDAY 23.				
0	11 27 26.73	20.390	N. 8 47 22.6	121.22	0	13 6 28.49	21.073	S. 1 41 55.5	137.02
1	11 29 29.08	20.393	8 35 13.6	121.78	1	13 8 35.00	21.099	1 55 37.8	137.08
2	11 31 31.44	20.396	8 23 1.3	122.32	2	13 10 41.68	21.128	2 9 20.4	137.12
3	11 33 33.83	20.399	8 10 45.8	122.85	3	13 12 48.53	21.156	2 23 3.2	137.14
4	11 35 36.23	20.403	7 58 27.1	123.38	4	13 14 55.55	21.185	2 36 46.1	137.16
5	11 37 38.66	20.408	7 46 5.2	123.91	5	13 17 2.75	21.215	2 50 29.1	137.17
6	11 39 41.12	20.413	7 33 40.2	124.43	6	13 19 10.13	21.244	3 4 12.1	137.16
7	11 41 43.61	20.418	7 21 12.1	124.93	7	13 21 17.68	21.275	3 17 55.0	137.13
8	11 43 46.13	20.423	7 8 41.0	125.43	8	13 23 25.43	21.307	3 31 37.7	137.10
9	11 45 48.68	20.428	6 56 7.0	125.91	9	13 25 33.36	21.338	3 45 20.2	137.04
10	11 47 51.27	20.436	6 43 30.1	126.39	10	13 27 41.49	21.371	3 59 2.3	136.98
11	11 49 53.91	20.443	6 30 50.3	126.86	11	13 29 49.81	21.403	4 12 44.0	136.91
12	11 51 56.59	20.451	6 18 7.8	127.32	12	13 31 58.33	21.437	4 26 25.2	136.82
13	11 53 59.32	20.459	6 5 22.5	127.77	13	13 34 7.05	21.471	4 40 5.8	136.72
14	11 56 2.10	20.468	5 52 34.6	128.21	14	13 36 15.98	21.506	4 53 45.8	136.60
15	11 58 4.93	20.476	5 39 44.0	128.64	15	13 38 25.12	21.541	5 7 25.0	136.47
16	12 0 7.81	20.486	5 26 50.9	129.06	16	13 40 34.47	21.576	5 21 3.4	136.33
17	12 2 10.76	20.497	5 13 55.3	129.48	17	13 42 44.03	21.612	5 34 40.9	136.16
18	12 4 13.77	20.507	5 0 57.2	129.88	18	13 44 53.81	21.648	5 48 17.3	135.98
19	12 6 16.84	20.518	4 47 56.7	130.28	19	13 47 3.81	21.686	6 1 52.6	135.79
20	12 8 19.98	20.529	4 34 53.9	130.66	20	13 49 14.04	21.723	6 15 26.8	135.59
21	12 10 23.19	20.542	4 21 48.8	131.03	21	13 51 24.49	21.762	6 28 59.7	135.38
22	12 12 26.48	20.554	4 8 41.5	131.40	22	13 53 35.18	21.800	6 42 31.3	135.14
23	12 14 29.84	20.568	N. 3 55 32.0	131.76	23	13 55 46.09	21.838	S. 6 56 1.4	134.89
TUESDAY 22.					THURSDAY 24.				
0	12 16 33.29	20.582	N. 3 42 20.4	132.10	0	13 57 57.24	21.878	S. 7 9 30.0	134.63
1	12 18 36.82	20.595	3 29 6.8	132.43	1	14 0 8.63	21.918	7 22 57.0	134.35
2	12 20 40.43	20.609	3 15 51.3	132.75	2	14 2 20.26	21.958	7 36 22.2	134.06
3	12 22 44.13	20.625	3 2 33.8	133.07	3	14 4 32.13	22.000	7 49 45.7	133.75
4	12 24 47.93	20.641	2 49 14.5	133.37	4	14 6 44.26	22.042	8 3 7.2	133.43
5	12 26 51.82	20.658	2 35 53.4	133.66	5	14 8 56.63	22.083	8 16 26.8	133.09
6	12 28 55.82	20.674	2 22 30.6	133.93	6	14 11 9.26	22.126	8 29 44.3	132.73
7	12 30 59.91	20.691	2 9 6.2	134.20	7	14 13 22.14	22.168	8 42 59.6	132.37
8	12 33 4.11	20.710	1 55 40.2	134.47	8	14 15 35.28	22.212	8 56 12.7	131.98
9	12 35 8.43	20.728	1 42 12.6	134.72	9	14 17 48.68	22.256	9 9 23.4	131.58
10	12 37 12.85	20.747	1 28 43.6	134.95	10	14 20 2.35	22.300	9 22 31.7	131.17
11	12 39 17.39	20.767	1 15 13.2	135.18	11	14 22 16.28	22.344	9 35 37.4	130.73
12	12 41 22.05	20.787	1 1 41.5	135.38	12	14 24 30.48	22.389	9 48 40.5	130.29
13	12 43 26.83	20.808	0 48 8.6	135.58	13	14 26 44.95	22.434	10 1 40.9	129.83
14	12 45 31.74	20.829	0 34 34.5	135.78	14	14 28 59.69	22.480	10 14 38.4	129.35
15	12 47 36.78	20.851	0 20 59.3	135.95	15	14 31 14.71	22.527	10 27 33.1	128.86
16	12 49 41.95	20.873	N. 0 7 23.1	136.12	16	14 33 30.01	22.573	10 40 24.7	128.34
17	12 51 47.25	20.896	S. 0 6 14.1	136.28	17	14 35 45.58	22.619	10 53 13.2	127.82
18	12 53 52.70	20.920	0 19 52.2	136.42	18	14 38 1.44	22.667	11 5 58.5	127.28
19	12 55 58.29	20.943	0 33 31.1	136.55	19	14 40 17.58	22.714	11 18 40.6	126.73
20	12 58 4.02	20.968	0 47 10.8	136.67	20	14 42 34.01	22.762	11 31 19.2	126.14
21	13 0 9.91	20.993	1 0 51.1	136.78	21	14 44 50.72	22.810	11 43 54.3	125.55
22	13 2 15.94	21.018	1 14 32.1	136.88	22	14 47 7.73	22.858	11 56 25.8	124.95
23	13 4 22.13	21.046	1 28 13.6	136.95	23	14 49 25.02	22.907	12 8 53.7	124.33
24	13 6 28.49	21.073	S. 1 41 55.5	137.02	24	14 51 42.61	22.956	S. 12 21 17.7	123.68

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 25.					SUNDAY 27.				
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
0	14 51 42.61	22° 956	S. 12 21 17.7	123.68	0	16 47 39.56	25° 291	S. 20 30 53.7	74.43
1	14 54 0.49	23° 005	12 33 37.8	123.03	1	16 50 11.43	25° 331	20 38 16.2	73° 05
2	14 56 18.67	23° 054	12 45 54.0	122.36	2	16 52 43.53	25° 369	20 45 30.3	71° 65
3	14 58 37.14	23° 104	12 58 6.1	121.68	3	16 55 15.86	25° 408	20 52 36.0	70° 25
4	15 0 55.92	23° 154	13 10 14.1	120.97	4	16 57 48.43	25° 447	20 59 33.3	68° 84
5	15 3 14.99	23° 203	13 22 17.7	120.24	5	17 0 21.22	25° 483	21 6 22.1	67° 43
6	15 5 34.36	23° 254	13 34 17.0	119.51	6	17 2 54.23	25° 519	21 13 2.4	65° 99
7	15 7 54.04	23° 305	13 46 11.8	118.76	7	17 5 27.45	25° 555	21 19 34.0	64° 54
8	15 10 14.02	23° 355	13 58 2.1	117.99	8	17 8 0.89	25° 590	21 25 56.9	63° 08
9	15 12 34.30	23° 406	14 9 47.7	117.21	9	17 10 34.53	25° 623	21 32 11.0	61° 62
10	15 14 54.89	23° 457	14 21 28.6	116.41	10	17 13 8.37	25° 656	21 38 16.3	60° 15
11	15 17 15.78	23° 508	14 33 4.6	115.58	11	17 15 42.40	25° 688	21 44 12.8	58° 67
12	15 19 36.98	23° 559	14 44 35.6	114.75	12	17 18 16.62	25° 719	21 50 0.3	57° 17
13	15 21 58.49	23° 610	14 56 1.6	113.90	13	17 20 51.03	25° 749	21 55 38.8	55° 66
14	15 24 20.30	23° 661	15 7 22.4	113.03	14	17 23 25.61	25° 778	22 1 8.2	54° 15
15	15 26 42.42	23° 713	15 18 38.0	112.15	15	17 26 0.36	25° 805	22 6 28.6	52° 63
16	15 29 4.85	23° 763	15 29 48.2	111.25	16	17 28 35.27	25° 832	22 11 39.7	51° 09
17	15 31 27.58	23° 815	15 40 53.0	110.33	17	17 31 10.34	25° 858	22 16 41.7	49° 56
18	15 33 50.63	23° 867	15 51 52.2	109.40	18	17 33 45.57	25° 883	22 21 34.4	48° 01
19	15 36 13.98	23° 917	16 2 45.8	108.46	19	17 36 20.94	25° 908	22 26 17.8	46° 46
20	15 38 37.63	23° 968	16 13 33.7	107.49	20	17 38 56.46	25° 931	22 30 51.9	44° 90
21	15 41 1.60	24° 020	16 24 15.7	106.52	21	17 41 38.11	25° 952	22 35 16.6	43° 33
22	15 43 25.87	24° 070	16 34 51.9	105.53	22	17 44 7.88	25° 973	22 39 31.9	41° 75
23	15 45 50.44	24° 121	S. 16 45 22.0	104.51	23	17 46 43.78	25° 993	S. 22 43 37.6	40° 17
SATURDAY 26.					MONDAY 28.				
	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
0	15 48 15.32	24° 172	S. 16 55 46.0	103.48	0	17 49 19.79	26° 011	S. 22 47 33.9	38° 59
1	15 50 40.50	24° 223	17 6 3.8	102.44	1	17 51 55.91	26° 028	22 51 20.7	37° 00
2	15 53 5.99	24° 273	17 16 15.3	101.38	2	17 54 32.12	26° 043	22 54 57.9	35° 40
3	15 55 31.78	24° 323	17 26 20.4	100.31	3	17 57 8.42	26° 058	22 58 25.5	33° 79
4	15 57 57.87	24° 373	17 36 19.0	99.22	4	17 59 44.82	26° 073	23 1 43.4	32° 19
5	16 0 24.25	24° 423	17 46 11.0	98.12	5	18 2 21.29	26° 084	23 4 51.8	30° 59
6	16 2 50.94	24° 473	17 55 56.4	97.00	6	18 4 57.83	26° 095	23 7 50.4	28° 96
7	16 5 17.92	24° 521	18 5 35.0	95.86	7	18 7 34.43	26° 105	23 10 39.3	27° 34
8	16 7 45.19	24° 569	18 15 6.7	94.71	8	18 10 11.09	26° 115	23 13 18.5	25° 72
9	16 10 12.75	24° 618	18 24 31.5	93.55	9	18 12 47.81	26° 123	23 15 48.0	24° 10
10	16 12 40.61	24° 667	18 33 49.3	92.38	10	18 15 24.56	26° 128	23 18 7.7	22° 48
11	16 15 8.75	24° 714	18 43 0.0	91.18	11	18 18 1.35	26° 134	23 20 17.7	20° 84
12	16 17 37.18	24° 762	18 52 3.5	89.98	12	18 20 38.17	26° 138	23 22 17.8	19° 20
13	16 20 5.89	24° 809	19 0 59.7	88.75	13	18 23 15.01	26° 141	23 24 8.1	17° 58
14	16 22 34.89	24° 856	19 9 48.5	87.52	14	18 25 51.86	26° 142	23 25 48.7	15° 94
15	16 25 4.16	24° 901	19 18 29.9	86.28	15	18 28 28.71	26° 142	23 27 19.4	14° 30
16	16 27 33.70	24° 947	19 27 3.8	85.01	16	18 31 5.56	26° 141	23 28 40.3	12° 67
17	16 30 3.52	24° 993	19 35 30.0	83.73	17	18 33 42.40	26° 138	23 29 51.4	11° 03
18	16 32 33.61	25° 037	19 43 48.5	82.44	18	18 36 19.22	26° 135	23 30 52.7	9° 39
19	16 35 3.96	25° 080	19 51 59.3	81.14	19	18 38 56.02	26° 131	23 31 44.1	7° 75
20	16 37 34.57	25° 123	20 0 2.2	79.82	20	18 41 32.79	26° 125	23 32 25.7	6° 12
21	16 40 5.44	25° 167	20 7 57.1	78.49	21	18 44 9.52	26° 118	23 32 57.5	4° 48
22	16 42 36.57	25° 208	20 15 44.1	77.16	22	18 46 46.20	26° 108	23 33 19.5	2° 85
23	16 45 7.94	25° 249	20 23 23.0	75.80	23	18 49 22.82	26° 098	23 33 31.7	1° 22
24	16 47 39.56	25° 291	S. 20 30 53.7	74.43	24	18 51 59.38	26° 088	S. 23 33 34.1	0° 42

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 29.					THURSDAY 31.				
0	18 51 59.38	26.088	S. 23 33 34.1	0.42	0	20 53 53.53	24.373	S. 20 33 59.1	71.18
1	18 54 35.87	26.076	23 33 26.7	2.04	1	20 56 19.61	24.320	20 26 48.3	72.42
2	18 57 12.29	26.063	23 33 9.6	3.67	2	20 58 45.37	24.268	20 19 30.1	73.63
3	18 59 48.62	26.048	23 32 42.7	5.29	3	21 1 10.82	24.214	20 12 4.7	74.83
4	19 2 24.86	26.032	23 32 6.1	6.92	4	21 3 35.94	24.161	20 4 32.1	76.03
5	19 5 1.00	26.015	23 31 19.7	8.53	5	21 6 0.75	24.108	19 56 52.4	77.21
6	19 7 37.04	25.997	23 30 23.7	10.14	6	21 8 25.23	24.053	19 49 5.6	78.38
7	19 10 12.96	25.977	23 29 18.0	11.75	7	21 10 49.39	23.999	19 41 11.9	79.53
8	19 12 48.76	25.957	23 28 2.7	13.36	8	21 13 13.22	23.944	19 33 11.2	80.68
9	19 15 24.44	25.935	23 26 37.7	14.96	9	21 15 36.72	23.890	19 25 3.8	81.80
10	19 17 59.98	25.912	23 25 3.2	16.55	10	21 17 59.90	23.836	19 16 49.6	82.92
11	19 20 35.38	25.887	23 23 19.1	18.15	11	21 20 22.75	23.780	19 8 28.8	84.02
12	19 23 10.62	25.862	23 21 25.4	19.73	12	21 22 45.26	23.725	19 0 1.4	85.11
13	19 25 45.72	25.837	23 19 22.3	21.32	13	21 25 7.45	23.671	18 51 27.5	86.18
14	19 28 20.66	25.809	23 17 9.6	22.89	14	21 27 29.31	23.616	18 42 47.2	87.24
15	19 30 55.43	25.780	23 14 47.6	24.45	15	21 29 50.84	23.560	18 34 0.6	88.29
16	19 33 30.02	25.751	23 12 16.2	26.02	16	21 32 12.03	23.505	18 25 7.7	89.33
17	19 36 4.44	25.721	23 9 35.4	27.57	17	21 34 32.90	23.451	18 16 8.6	90.36
18	19 38 38.67	25.689	23 6 45.4	29.11	18	21 36 53.44	23.396	18 7 3.4	91.37
19	19 41 12.71	25.658	23 3 46.1	30.65	19	21 39 13.65	23.340	17 57 52.2	92.37
20	19 43 46.56	25.624	23 0 37.6	32.18	20	21 41 33.52	23.286	17 48 35.0	93.35
21	19 46 20.20	25.589	22 57 19.9	33.71	21	21 43 53.07	23.230	17 39 12.0	94.32
22	19 48 53.63	25.553	22 53 53.1	35.23	22	21 46 12.28	23.175	17 29 43.2	95.29
23	19 51 26.84	25.517	S. 22 50 17.2	36.73	23	21 48 31.17	23.121	S. 17 20 8.6	96.23
WEDNESDAY 30.					FRIDAY, NOV. 1.				
0	19 53 59.83	25.480	S. 22 46 32.3	38.23	0	21 50 49.73	23.066	S. 17 10 28.5	97.14
1	19 56 32.60	25.444	22 42 38.4	39.73					
2	19 59 5.13	25.403	22 38 35.6	41.21					
3	20 1 37.43	25.363	22 34 23.9	42.68					
4	20 4 9.49	25.324	22 30 3.4	44.14					
5	20 6 41.31	25.282	22 25 34.2	45.59					
6	20 9 12.87	25.239	22 20 56.3	47.03					
7	20 11 44.18	25.197	22 16 9.8	48.48					
8	20 14 15.23	25.153	22 11 14.6	49.90					
9	20 16 46.01	25.108	22 6 11.0	51.31					
10	20 19 16.52	25.063	22 0 58.9	52.72					
11	20 21 46.77	25.018	21 55 38.4	54.10					
12	20 24 16.73	24.971	21 50 9.7	55.48					
13	20 26 46.42	24.924	21 44 32.6	56.86					
14	20 29 15.82	24.876	21 38 47.4	58.22					
15	20 31 44.93	24.828	21 32 54.0	59.58					
16	20 34 13.76	24.780	21 26 52.5	60.91					
17	20 36 42.29	24.730	21 20 43.1	62.23					
18	20 39 10.52	24.680	21 14 25.7	63.55					
19	20 41 38.45	24.630	21 8 0.5	64.85					
20	20 44 6.08	24.580	21 1 27.5	66.14					
21	20 46 33.41	24.529	20 54 46.8	67.43					
22	20 49 0.43	24.477	20 47 58.4	68.69					
23	20 51 27.13	24.425	20 41 2.5	69.94					
24	20 53 53.53	24.373	S. 20 33 59.1	71.18					

PHASES OF THE MOON.

		h	m
Oct. 1	☾ First Quarter -	13	33.1
8	☉ Full Moon -	13	25.8
16	☾ Last Quarter -	12	37.5
24	● New Moon -	2	25.9
30	☾ First Quarter -	20	30.6

		h	m
Oct. 1	☾ Perigee -	-	4
15	☾ Apogee -	-	9
27	☾ Perigee -	-	4

MEAN TIME.									
LUNAR DISTANCES.									
Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
1	SUN W.	82 35 32	2623	84 13 56	2624	85 52 19	2623	87 30 43	2624
	Antares W.	23 24 34	2494	25 5 55	2468	26 47 53	2446	28 30 22	2429
	Fomalhaut E.	63 32 50	2539	61 52 31	2548	60 12 24	2558	58 32 31	2568
	α Pegasi E.	81 12 19	2705	79 35 46	2711	77 59 21	2716	76 23 3	2723
2	SUN W.	95 42 29	2628	97 20 46	2629	98 59 2	2631	100 37 15	2632
	Antares W.	37 7 21	2383	38 51 20	2378	40 35 27	2373	42 19 41	2370
	Fomalhaut E.	50 17 18	2643	48 39 21	2663	47 1 51	2686	45 24 52	2712
	α Pegasi E.	68 24 16	2774	66 49 14	2788	65 14 30	2803	63 40 6	2820
	α Arietis E.	110 43 59	2453	109 1 40	2450	107 19 17	2449	105 36 52	2448
3	SUN W.	108 47 44	2643	110 25 40	2646	112 3 33	2649	113 41 22	2652
	Antares W.	51 1 45	2361	52 46 16	2361	54 30 47	2361	56 15 18	2361
	Jupiter W.	28 32 47	2344	30 17 42	2347	32 2 33	2349	33 47 21	2352
	Fomalhaut E.	37 30 5	2899	35 57 45	2954	34 26 35	3018	32 56 44	3091
	α Pegasi E.	55 54 25	2935	54 22 51	2965	52 51 55	2999	51 21 41	3036
	α Arietis E.	97 4 33	2448	95 22 6	2450	93 39 42	2451	91 57 20	2453
4	SUN W.	121 49 18	2671	123 26 37	2675	125 3 50	2681	126 40 56	2686
	Antares W.	64 57 33	2368	66 41 53	2371	68 26 9	2374	70 10 21	2377
	Jupiter W.	42 30 21	2366	44 14 44	2370	45 59 1	2373	47 43 14	2378
	α Pegasi E.	44 3 40	2392	42 39 19	2363	41 16 20	2441	39 54 50	2529
	α Arietis E.	83 26 26	2470	81 44 31	2475	80 2 43	2480	78 21 1	2485
5	Antares W.	78 50 10	2396	80 33 51	2401	82 17 25	2405	84 0 52	2411
	Jupiter W.	56 22 45	2400	58 6 20	2405	59 49 47	2410	61 33 7	2417
	α Arietis E.	69 54 45	2521	68 14 1	2530	66 33 30	2539	64 53 11	2550
	Aldebaran E.	100 29 40	2368	98 45 20	2374	97 1 8	2379	95 17 3	2384
6	Antares W.	92 36 6	2441	94 18 42	2448	96 1 9	2455	97 43 25	2462
	Jupiter W.	70 7 39	2448	71 50 6	2455	73 32 23	2462	75 14 30	2469
	α Aquilæ W.	51 50 46	2613	53 9 6	2666	54 28 17	2725	55 48 14	2788
	α Arietis E.	56 35 33	2613	54 56 56	2629	53 18 40	2645	51 40 46	2663
	Aldebaran E.	86 38 41	2415	84 55 28	2422	83 12 24	2429	81 29 30	2436
7	Jupiter W.	83 42 21	2510	85 23 21	2519	87 4 8	2528	88 44 42	2537
	α Aquilæ W.	62 36 53	2358	63 59 57	2342	65 23 20	2328	66 46 59	2316
	α Arietis E.	43 38 4	2779	42 3 8	2808	40 28 50	2841	38 55 15	2876
	Aldebaran E.	72 57 47	2477	71 16 1	2486	69 34 28	2494	67 53 7	2504
8	Jupiter W.	97 4 16	2587	98 43 28	2597	100 22 27	2608	102 1 11	2619
	α Aquilæ W.	73 47 56	2385	75 12 25	2385	76 36 54	2386	78 1 22	2388
	Fomalhaut W.	38 35 33	3063	40 4 28	3039	41 33 53	3018	43 3 43	3002
	α Arietis E.	31 20 34	2130	29 53 1	2203	28 26 55	2287	27 2 28	2385
	Aldebaran E.	59 29 44	2554	57 49 46	2565	56 10 3	2576	54 30 35	2587
	Pollux E.	103 39 59	2566	102 0 17	2575	100 20 48	2586	98 41 34	2596
9	α Aquilæ W.	85 2 38	3317	86 26 30	3325	87 50 12	3336	89 13 42	3347
	Fomalhaut W.	50 36 52	2959	52 7 56	2956	53 39 4	2954	55 10 14	2955
	α Pegasi W.	38 3 33	2861	39 17 32	2791	40 32 44	2727	41 49 2	2673
	Aldebaran E.	46 17 6	2646	44 39 13	2657	43 1 36	2670	41 24 16	2683
	Pollux E.	90 29 4	2652	88 51 19	2663	87 13 50	2675	85 36 36	2687
10	Fomalhaut W.	62 45 32	2971	64 16 21	2976	65 47 4	2982	67 17 39	2989

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	SUN W.	89° 9' 6"	2624	90° 47' 28"	2624	92° 25' 50"	2626	94° 4' 10"	2626
	Antares W.	30 13 15	2417	31 56 26	2406	33 39 52	2397	35 23 31	2389
	Fomalhaut E.	56 52 52	2580	55 13 29	2593	53 34 25	2607	51 55 40	2624
	α Pegasi E.	74 46 54	2731	73 10 55	2740	71 35 8	2750	69 59 35	2761
2	SUN W.	102 15 26	2634	103 53 35	2636	105 31 41	2638	107 9 44	2640
	Antares W.	44 3 59	2367	45 48 21	2364	47 32 47	2363	49 17 15	2362
	Fomalhaut E.	43 48 28	2741	42 12 42	2773	40 37 39	2811	39 3 25	2852
	α Pegasi E.	62 6 4	2839	60 32 27	2859	58 59 16	2883	57 26 35	2907
	α Arietis E.	103 54 25	2447	102 11 57	2446	100 29 28	2447	98 47 0	2448
3	SUN W.	115 19 7	2655	116 56 47	2658	118 34 23	2663	120 11 53	2666
	Antares W.	57 59 49	2362	59 44 18	2364	61 28 45	2365	63 13 10	2366
	Jupiter W.	35 32 5	2355	37 16 45	2357	39 1 22	2360	40 45 54	2364
	Fomalhaut E.	31 28 23	3176	30 1 45	3276	28 37 5	3393	27 14 40	3534
	α Pegasi E.	49 52 13	3078	48 23 36	3123	46 55 54	3174	45 29 14	3230
	α Arietis E.	90 15 1	2455	88 32 45	2459	86 50 34	2462	85 8 28	2465
4	SUN W.	128 17 55	2691	129 54 47	2697	131 31 31	2703	133 8 7	2709
	Antares W.	71 54 29	2380	73 38 32	2384	75 22 30	2387	77 6 23	2391
	Jupiter W.	49 27 20	2382	51 11 21	2386	52 55 16	2391	54 39 4	2396
	α Pegasi E.	38 34 58	3630	37 16 56	3743	36 0 54	3871	34 47 5	4018
	α Arietis E.	76 39 27	2492	74 58 2	2499	73 16 47	2505	71 35 41	2512
5	Antares W.	85 44 11	2416	87 27 23	2422	89 10 26	2428	90 53 21	2435
	Jupiter W.	63 16 18	2422	64 59 22	2429	66 42 16	2434	68 25 2	2440
	α Arietis E.	63 13 7	2561	61 33 18	2573	59 53 46	2585	58 14 30	2599
	Aldebaran E.	93 33 5	2390	91 49 16	2396	90 5 36	2402	88 22 4	2408
6	Antares W.	99 25 31	2471	101 7 25	2479	102 49 8	2487	104 30 39	2496
	Jupiter W.	76 56 27	2477	78 38 12	2485	80 19 47	2493	82 1 10	2502
	α Aquilæ W.	57 8 52	3454	58 30 7	3425	59 51 55	3400	61 14 11	3378
	α Arietis E.	50 3 17	2683	48 26 14	2704	46 49 39	2727	45 13 35	2752
	Aldebaran E.	79 46 47	2444	78 4 15	2452	76 21 54	2460	74 39 45	2468
7	Jupiter W.	90 25 4	2547	92 5 12	2556	93 45 7	2566	95 24 48	2576
	α Aquilæ W.	68 10 52	3306	69 34 57	3298	70 59 11	3293	72 23 31	3288
	α Arietis E.	37 22 26	2916	35 50 28	2960	34 19 26	3009	32 49 25	3066
	Aldebaran E.	66 11 59	2514	64 31 5	2523	62 50 24	2533	61 9 57	2543
8	Jupiter W.	103 39 40	2631	105 17 53	2641	106 55 52	2653	108 33 35	2664
	α Aquilæ W.	79 25 47	3291	80 50 9	3295	82 14 26	3301	83 38 36	3308
	Fomalhaut W.	44 33 54	2989	46 4 21	2977	47 35 2	2969	49 5 53	2963
	α Arietis E.	25 39 54	3498	24 19 28	3635	23 1 31	3798	21 46 27	3997
	Aldebaran E.	52 51 22	2598	51 12 24	2610	49 33 42	2621	47 55 16	2633
	Pollux E.	97 2 34	2607	95 23 49	2618	93 45 19	2629	92 7 4	2640
9	α Aquilæ W.	90 36 59	3359	92 0 2	3373	93 22 49	3387	94 45 20	3402
	Fomalhaut W.	56 41 23	2956	58 12 31	2958	59 43 36	2962	61 14 36	2965
	α Pegasi W.	43 6 18	3625	44 24 25	3584	45 43 17	3548	47 2 48	3516
	Aldebaran E.	39 47 13	2696	38 10 27	2709	36 33 59	2722	34 57 48	2735
	Pollux E.	83 59 39	2698	82 22 57	2711	80 46 32	2723	79 10 23	2735
10	Fomalhaut W.	68 48 6	2996	70 18 24	3004	71 48 32	3012	73 18 30	3020

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
10	α Pegasi W.	48 22 54	3490	49 43 29	3467	51 4 30	3446	52 25 54	3430
	Aldebaran E.	33 21 55	2750	31 46 21	2764	30 11 6	2778	28 36 9	2791
	Pollux E.	77 34 29	2747	75 58 52	2760	74 23 31	2772	72 48 26	2785
11	Fomalhaut W.	74 48 18	3028	76 17 56	3037	77 47 23	3046	79 16 39	3056
	α Pegasi W.	59 16 49	3378	60 39 31	3372	62 2 19	3369	63 25 11	3366
	Pollux E.	64 57 4	2846	63 23 36	2858	61 50 23	2870	60 17 26	2883
	Regulus E.	100 49 25	2831	99 15 38	2843	97 42 6	2854	96 8 48	2866
	Saturn E.	103 1 28	2863	101 28 21	2874	99 55 29	2886	98 22 52	2898
12	Fomalhaut W.	86 40 2	3104	88 8 7	3114	89 36 0	3123	91 3 42	3133
	α Pegasi W.	70 19 53	3366	71 42 48	3370	73 5 39	3372	74 28 27	3376
	α Arietis W.	26 58 26	3638	28 16 19	3580	29 35 15	3531	30 55 5	3488
	Pollux E.	52 36 31	2942	51 5 5	2953	49 33 53	2965	48 2 56	2976
	Regulus E.	88 25 53	2920	86 53 59	2930	85 22 18	2940	83 50 50	2950
	Saturn E.	90 43 20	2952	89 12 7	2962	87 41 6	2972	86 10 18	2982
13	α Pegasi W.	81 21 21	3398	82 43 40	3403	84 5 53	3408	85 28 0	3415
	α Arietis W.	37 43 42	3361	39 6 43	3345	40 30 2	3332	41 53 36	3321
	Pollux E.	40 31 42	3031	39 2 8	3043	37 32 48	3054	36 3 42	3065
	Regulus E.	76 16 29	2995	74 46 10	3003	73 16 1	3011	71 46 2	3018
	Saturn E.	78 39 17	3026	77 9 37	3035	75 40 8	3043	74 10 48	3051
	Mars E.	90 35 15	3223	89 9 33	3231	87 44 0	3239	86 18 37	3247
	Venus E.	97 49 2	3459	96 27 52	3468	95 6 52	3477	93 46 2	3485
	SUN E.	128 16 20	3386	126 53 47	3393	125 31 23	3401	124 9 8	3408
14	α Pegasi W.	92 16 52	3445	93 38 18	3451	94 59 37	3458	96 20 48	3464
	α Arietis W.	48 54 14	3282	50 18 46	3277	51 43 24	3273	53 8 7	3268
	Regulus E.	64 18 17	3051	62 49 7	3056	61 20 3	3061	59 51 6	3065
	Saturn E.	66 46 18	3082	65 17 46	3087	63 49 20	3092	62 21 1	3096
	Mars E.	79 13 49	3280	77 49 14	3285	76 24 45	3290	75 0 22	3294
	Venus E.	87 3 59	3520	85 43 57	3525	84 24 1	3531	83 4 11	3535
	SUN E.	117 19 46	3438	115 58 13	3444	114 36 46	3449	113 15 25	3453
15	α Arietis W.	60 12 55	3250	61 38 5	3246	63 3 20	3243	64 28 38	3240
	Aldebaran W.	28 4 43	3096	29 32 57	3095	31 1 13	3093	32 29 31	3092
	Regulus E.	52 27 31	3082	50 58 59	3083	49 30 29	3086	48 2 2	3087
	Saturn E.	55 0 31	3111	53 32 35	3113	52 4 41	3114	50 36 49	3115
	Mars E.	67 59 34	3310	66 35 34	3313	65 11 37	3313	63 47 41	3313
	Venus E.	76 26 7	3552	75 6 40	3554	73 47 15	3555	72 27 51	3555
	SUN E.	106 29 37	3467	105 8 36	3468	103 47 36	3469	102 26 37	3470
16	α Arietis W.	71 36 21	3218	73 2 9	3214	74 28 2	3208	75 54 2	3203
	Aldebaran W.	39 51 29	3081	41 20 2	3078	42 48 38	3074	44 17 19	3070
	Regulus E.	40 39 56	3087	39 11 30	3086	37 43 3	3084	36 14 34	3082
	Saturn E.	43 17 33	3112	41 49 38	3111	40 21 42	3109	38 53 43	3106
	Mars E.	56 48 1	3310	55 24 1	3308	53 59 59	3306	52 35 54	3302
	Venus E.	65 50 53	3551	64 31 25	3549	63 11 55	3546	61 52 22	3543
	SUN E.	95 41 38	3463	94 20 33	3460	92 59 24	3458	91 38 13	3454
17	α Arietis W.	83 5 41	3173	84 32 23	3165	85 59 14	3158	87 26 14	3150
	Aldebaran W.	51 42 11	3043	53 11 30	3036	54 40 58	3030	56 10 34	3022

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
10	α Pegasi W.	53 47 37	3415	55 9 37	3403	56 31 50	3393	57 54 45	3385
	Aldebaran E.	27 1 31	2808	25 27 14	2825	23 53 18	2841	22 19 43	2858
	Pollux E.	71 13 38	2796	69 39 5	2809	68 4 49	2821	66 30 48	2834
11	Fomalhaut W.	80 45 43	3065	82 14 36	3075	83 43 16	3084	85 11 45	3094
	α Pegasi W.	64 48 6	3365	66 11 3	3365	67 34 0	3365	68 56 57	3365
	Pollux E.	58 44 45	2894	57 12 19	2906	55 40 8	2918	54 8 12	2930
	Regulus E.	94 35 45	2876	93 2 56	2887	91 30 21	2898	89 58 0	2909
	Saturn E.	96 50 30	2909	95 18 22	2920	93 46 28	2930	92 14 47	2941
12	Fomalhaut W.	92 31 11	3143	93 58 28	3153	95 25 33	3163	96 52 26	3173
	α Pegasi W.	75 51 11	3379	77 13 52	3384	78 36 27	3388	79 58 57	3393
	α Arietis W.	32 15 42	3454	33 36 57	3425	34 58 45	3400	36 21 1	3379
	Pollux E.	46 32 13	2987	45 1 44	2999	43 31 30	3009	42 1 29	3021
	Regulus E.	82 19 34	2960	80 48 31	2969	79 17 39	2977	77 46 58	2987
	Saturn E.	84 39 43	2991	83 9 19	3001	81 39 7	3010	80 9 7	3018
13	α Pegasi W.	86 50 0	3421	88 11 53	3426	89 33 40	3432	90 55 20	3439
	α Arietis W.	43 17 24	3312	44 41 22	3302	46 5 31	3294	47 29 49	3288
	Pollux E.	34 34 49	3077	33 6 11	3088	31 37 47	3100	30 9 37	3111
	Regulus E.	70 16 12	3026	68 46 31	3033	67 16 59	3039	65 47 34	3045
	Saturn E.	72 41 38	3057	71 12 36	3064	69 43 42	3070	68 14 56	3077
	Mars E.	84 53 23	3254	83 28 18	3261	82 3 21	3267	80 38 31	3274
	Venus E.	92 25 21	3493	91 4 49	3500	89 44 25	3506	88 24 8	3514
	Sun E.	122 47 0	3415	121 25 1	3422	120 3 9	3428	118 41 24	3434
14	α Pegasi W.	97 41 52	3471	99 2 48	3478	100 23 37	3484	101 44 19	3491
	α Arietis W.	54 32 56	3265	55 57 49	3260	57 22 47	3257	58 47 49	3253
	Regulus E.	58 22 14	3069	56 53 27	3073	55 24 44	3077	53 56 6	3079
	Saturn E.	60 52 46	3100	59 24 37	3103	57 56 31	3107	56 28 30	3109
	Mars E.	73 36 4	3299	72 11 51	3302	70 47 42	3305	69 23 36	3308
	Venus E.	81 44 25	3540	80 24 45	3544	79 5 9	3546	77 45 36	3550
	Sun E.	111 54 8	3456	110 32 55	3460	109 11 46	3463	107 50 40	3465
15	α Arietis W.	65 54 0	3235	67 19 29	3231	68 45 1	3226	70 10 39	3223
	Aldebaran W.	33 57 50	3091	35 26 11	3089	36 54 34	3087	38 23 0	3084
	Regulus E.	46 33 36	3087	45 5 10	3088	43 36 46	3087	42 8 21	3087
	Saturn E.	49 8 58	3115	47 41 7	3116	46 13 17	3115	44 45 25	3114
	Mars E.	62 23 45	3314	60 59 50	3313	59 35 54	3313	58 11 58	3313
	Venus E.	71 8 48	3556	69 49 6	3555	68 29 43	3554	67 10 18	3554
	Sun E.	101 5 39	3469	99 44 40	3469	98 23 41	3467	97 2 40	3466
16	α Arietis W.	77 20 8	3198	78 46 20	3191	80 12 40	3186	81 39 6	3179
	Aldebaran W.	45 46 5	3065	47 14 57	3060	48 43 55	3055	50 12 59	3049
	Regulus E.	34 46 3	3080	33 17 29	3078	31 48 53	3076	30 20 14	3074
	Saturn E.	37 25 41	3103	35 57 35	3100	34 29 25	3096	33 1 10	3092
	Mars E.	51 11 45	3299	49 47 32	3294	48 23 14	3290	46 58 51	3286
	Venus E.	60 32 45	3538	59 13 3	3534	57 53 16	3529	56 33 24	3523
	Sun E.	90 16 57	3449	88 55 36	3445	87 34 10	3439	86 12 38	3433
17	α Arietis W.	88 53 23	3143	90 20 41	3134	91 48 9	3125	93 15 48	3116
	Aldebaran W.	57 40 20	3014	59 10 16	3005	60 40 22	2997	62 10 39	2987

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
17	Saturn E.	31 32 51	3088	30 4 27	3083	28 35 57	3078	27 7 21	3074
	Mars E.	45 34 23	3280	44 9 48	3274	42 45 6	3267	41 20 16	3261
	Venus E.	55 13 25	3517	53 53 20	3510	52 33 7	3504	51 12 47	3497
	SUN E.	84 50 59	3427	83 29 13	3421	82 7 20	3413	80 45 18	3405
18	Aldebaran W.	63 41 8	2977	65 11 49	2967	66 42 43	2957	68 13 50	2946
	Pollux W.	20 2 1	3121	21 29 45	3091	22 58 5	3066	24 26 56	3043
	Mars E.	34 14 5	3223	32 48 23	3214	31 22 31	3206	29 56 29	3198
	Venus E.	44 28 50	3451	43 7 31	3442	41 46 2	3431	40 24 21	3420
	SUN E.	73 52 44	3359	72 29 41	3348	71 6 25	3337	69 42 57	3325
19	Aldebaran W.	75 53 0	2887	77 25 36	2873	78 58 29	2860	80 31 39	2846
	Pollux W.	31 57 55	2943	33 29 19	2925	35 1 6	2908	36 33 15	2891
	Venus E.	33 32 44	3362	32 9 44	3351	30 46 31	3338	29 23 4	3326
	SUN E.	62 42 9	3264	61 17 15	3250	59 52 5	3236	58 26 38	3222
20	Aldebaran W.	88 21 59	2775	89 56 59	2760	91 32 19	2745	93 7 59	2731
	Pollux W.	44 19 30	2805	45 53 51	2789	47 28 33	2772	49 3 38	2755
	SUN E.	51 15 11	3148	49 48 0	3133	48 20 31	3119	46 52 44	3103
21	Pollux W.	57 4 34	2672	58 41 52	2655	60 19 32	2638	61 57 35	2621
	SUN E.	39 29 8	3027	37 59 29	3013	36 29 32	2999	34 59 18	2985
22	Pollux W.	70 13 24	2541	71 53 40	2526	73 34 17	2510	75 15 16	2494
	SUN E.	27 24 0	2926	25 52 14	2917	24 20 17	2912	22 48 13	2907
26	SUN W.	25 29 47	2574	27 9 17	2564	28 49 2	2554	30 29 0	2547
	Fomalhaut E.	94 31 39	2384	92 47 41	2380	91 3 38	2378	89 19 31	2375
27	SUN W.	38 50 52	2527	40 31 28	2525	42 12 7	2524	43 52 47	2524
	Fomalhaut E.	80 38 37	2379	78 54 32	2382	77 10 31	2385	75 26 35	2390
	α Pegasi E.	97 43 6	2594	96 4 3	2593	94 24 58	2591	92 45 51	2592
28	SUN W.	52 15 53	2532	53 56 22	2535	55 36 47	2538	57 17 7	2542
	Fomalhaut E.	66 49 7	2428	65 6 12	2438	63 23 32	2450	61 41 9	2463
	α Pegasi E.	84 30 55	2610	82 52 14	2618	81 13 43	2625	79 35 22	2635
29	SUN W.	65 37 15	2567	67 16 55	2573	68 56 27	2579	70 35 51	2585
	Antares W.	33 52 7	2533	35 37 18	2531	37 22 32	2531	39 7 47	2531
	Fomalhaut E.	53 14 17	2546	51 34 8	2568	49 54 29	2592	48 15 23	2618
	α Pegasi E.	71 27 20	2698	69 50 38	2716	68 14 19	2734	66 38 24	2753
30	SUN W.	78 50 30	2621	80 28 57	2629	82 7 13	2636	83 45 19	2644
	Antares W.	47 53 31	2344	49 38 26	2348	51 23 15	2353	53 7 57	2359
	Jupiter W.	21 30 15	2342	23 15 13	2350	25 0 0	2357	26 44 37	2365
	Fomalhaut E.	40 9 54	2794	38 35 18	2842	37 1 44	2895	35 29 19	2956
	α Pegasi E.	58 45 57	2877	57 13 9	2909	55 41 1	2942	54 9 36	2979
	α Arietis E.	100 10 41	2430	98 27 49	2436	96 45 6	2442	95 2 31	2449
31	SUN W.	91 53 5	2685	93 30 6	2694	95 6 54	2701	96 43 32	2710
	Antares W.	61 49 26	2389	63 33 17	2396	65 16 58	2402	67 0 30	2409
	Jupiter W.	35 24 53	2403	37 8 23	2412	38 51 41	2420	40 34 47	2428
	α Pegasi E.	46 45 15	3217	45 19 26	3278	43 54 49	3348	42 31 33	3423
	α Arietis E.	86 32 9	2487	84 50 38	2496	83 9 19	2505	81 28 13	2514

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
		^o ['] ["]		^o ['] ["]		^o ['] ["]		^o ['] ["]	
17	Saturn E.	25 38 40	3069	24 9 53	3065	22 41 0	3061	21 12 3	3056
	Mars E.	39 55 19	3254	38 30 14	3247	37 5 0	3239	35 39 37	3231
	Venus E.	49 52 19	3488	48 31 41	3480	47 10 54	3471	45 49 57	3462
	SUN E.	79 23 7	3397	78 0 47	3387	76 38 16	3379	75 15 36	3369
18	Aldebaran W.	69 45 10	2935	71 16 45	2923	72 48 35	2911	74 20 40	2899
	Pollux W.	25 56 16	3021	27 26 3	3000	28 56 16	2980	30 26 54	2962
	Mars E.	28 30 17	3189	27 3 55	3181	25 37 23	3173	24 10 42	3164
	Venus E.	39 2 27	3409	37 40 21	3398	36 18 2	3386	34 55 30	3374
	SUN E.	68 19 15	3314	66 55 20	3302	65 31 11	3290	64 6 48	3276
19	Aldebaran W.	82 5 7	2833	83 38 52	2818	85 12 56	2805	86 47 18	2790
	Pollux W.	38 5 46	2873	39 38 39	2856	41 11 54	2839	42 45 31	2822
	Venus E.	27 59 23	3315	26 35 29	3303	25 11 21	3292	23 47 0	3280
	SUN E.	57 0 55	3208	55 34 55	3193	54 8 38	3178	52 42 3	3164
20	Aldebaran W.	94 43 58	2715	96 20 18	2699	97 56 59	2683	99 34 1	2667
	Pollux W.	50 39 5	2738	52 14 54	2722	53 51 5	2705	55 27 38	2688
	SUN E.	45 24 38	3087	43 56 13	3073	42 27 30	3057	40 58 28	3043
21	Pollux W.	63 36 1	2606	65 14 48	2589	66 53 58	2573	68 33 30	2557
	SUN E.	33 28 46	2971	31 57 57	2958	30 26 52	2947	28 55 33	2936
22	Pollux W.	76 56 37	2480	78 38 18	2465	80 20 20	2450	82 2 43	2435
	SUN E.	21 16 3	2906	19 43 52	2909	18 11 45	2919	16 39 50	2935
26	SUN W.	32 9 8	2540	33 49 25	2535	35 29 49	2532	37 10 18	2528
	Fomalhaut E.	87 35 21	2374	85 51 9	2374	84 6 57	2375	82 22 46	2376
27	SUN W.	45 33 27	2524	47 14 7	2525	48 54 45	2527	50 35 21	2530
	Fomalhaut E.	73 42 46	2396	71 59 6	2403	70 15 35	2410	68 32 15	2419
	α Pegasi E.	91 6 45	2593	89 27 40	2596	87 48 40	2599	86 9 44	2604
28	SUN W.	58 57 22	2547	60 37 30	2551	62 17 32	2556	63 57 28	2562
	Fomalhaut E.	59 59 4	2477	58 17 18	2492	56 35 53	2509	54 54 52	2527
	α Pegasi E.	77 57 15	2645	76 19 21	2657	74 41 43	2669	73 4 22	2683
29	SUN W.	72 15 6	2593	73 54 11	2599	75 33 7	2606	77 11 54	2614
	Antares W.	40 53 1	2332	42 38 14	2334	44 23 24	2337	46 8 30	2340
	Fomalhaut E.	46 36 52	2646	44 59 0	2678	43 21 51	2712	41 45 27	2750
	α Pegasi E.	65 2 55	2774	63 27 53	2797	61 53 21	2822	60 19 22	2848
30	SUN W.	85 23 14	2652	87 0 58	2660	88 38 32	2669	90 15 54	2677
	Antares W.	54 52 31	2364	56 36 58	2370	58 21 16	2376	60 5 25	2382
	Jupiter W.	28 29 2	2372	30 13 17	2380	31 57 20	2388	33 41 12	2396
	Fomalhaut E.	33 58 11	3026	32 28 30	3105	31 0 27	3197	29 34 14	3304
	α Pegasi E.	52 38 57	3018	51 9 6	3062	49 40 10	3110	48 12 12	3160
	α Arietis E.	93 20 6	2456	91 37 51	2463	89 55 46	2471	88 13 52	2479
31	SUN W.	98 19 58	2719	99 56 13	2728	101 32 16	2737	103 8 7	2745
	Antares W.	68 43 52	2417	70 27 3	2424	72 10 4	2431	73 52 55	2438
	Jupiter W.	42 17 42	2436	44 0 26	2444	45 42 58	2453	47 25 18	2460
	α Pegasi E.	41 9 43	3507	39 49 27	3600	38 30 53	3707	37 14 13	3823
	α Arietis E.	79 47 19	2523	78 6 38	2533	76 26 11	2543	74 45 58	2554

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Frid.	1	14 27 29.54	9.812	S. 14 35 30.9	47.84	1 6.99	16 19.03	0.045
Sat.	2	14 31 25.42	9.845	14 54 31.9	47.24	1 7.10	16 19.71	0.012
Sun.	3	14 35 22.09	9.878	15 13 18.2	46.62	1 7.22	16 19.59	0.022
Mon.	4	14 39 19.57	9.912	15 31 49.5	45.98	1 7.34	16 18.67	0.055
Tues.	5	14 43 17.87	9.946	15 50 5.2	45.33	1 7.45	16 16.93	0.090
Wed.	6	14 47 16.99	9.981	16 8 5.2	44.66	1 7.57	16 14.37	0.124
Thur.	7	14 51 16.96	10.016	16 25 48.9	43.98	1 7.69	16 10.97	0.159
Frid.	8	14 55 17.77	10.051	16 43 16.1	43.28	1 7.81	16 6.72	0.195
Sat.	9	14 59 19.43	10.087	17 0 26.3	42.56	1 7.93	16 1.63	0.230
Sun.	10	15 3 21.95	10.123	17 17 19.1	41.83	1 8.05	15 55.69	0.266
Mon.	11	15 7 25.33	10.159	17 33 54.1	41.08	1 8.17	15 48.88	0.302
Tues.	12	15 11 29.57	10.195	17 50 11.0	40.32	1 8.29	15 41.21	0.338
Wed.	13	15 15 34.68	10.231	18 6 9.5	39.54	1 8.41	15 32.68	0.373
Thur.	14	15 19 40.65	10.267	18 21 48.9	38.74	1 8.53	15 23.29	0.409
Frid.	15	15 23 47.49	10.303	18 37 9.1	37.93	1 8.65	15 13.04	0.445
Sat.	16	15 27 55.19	10.339	18 52 9.6	37.10	1 8.76	15 1.93	0.481
Sun.	17	15 32 3.74	10.374	19 6 49.9	36.25	1 8.88	14 49.96	0.516
Mon.	18	15 36 13.14	10.409	19 21 9.8	35.40	1 9.00	14 37.15	0.551
Tues.	19	15 40 23.39	10.445	19 35 8.9	34.52	1 9.11	14 23.50	0.586
Wed.	20	15 44 34.48	10.479	19 48 46.7	33.63	1 9.22	14 9.01	0.621
Thur.	21	15 48 46.39	10.513	20 2 2.9	32.72	1 9.33	13 53.69	0.655
Frid.	22	15 52 59.12	10.547	20 14 57.1	31.79	1 9.44	13 37.57	0.688
Sat.	23	15 57 12.64	10.579	20 27 29.0	30.86	1 9.55	13 20.65	0.721
Sun.	24	16 1 26.93	10.611	20 39 38.2	29.90	1 9.65	13 2.96	0.753
Mon.	25	16 5 41.98	10.643	20 51 24.3	28.93	1 9.76	12 44.51	0.784
Tues.	26	16 9 57.77	10.673	21 2 46.9	27.95	1 9.86	12 25.33	0.814
Wed.	27	16 14 14.27	10.702	21 13 45.7	26.95	1 9.95	12 5.45	0.843
Thur.	28	16 18 31.47	10.730	21 24 20.4	25.94	1 10.05	11 44.87	0.871
Frid.	29	16 22 49.33	10.758	21 34 30.6	24.91	1 10.15	11 23.62	0.899
Sat.	30	16 27 7.85	10.785	21 44 16.1	23.87	1 10.24	11 1.72	0.926
Sun.	31	16 31 27.00	10.811	S. 21 53 36.6	22.82	1 10.32	10 39.19	0.952

*Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		h m s	° ' "	' "	m s	h m s
Frid.	1	14 27 32.21	S. 14 35 43.9	16 9.7	16 19.04	14 43 51.25
Sat.	2	14 31 28.10	14 54 44.7	16 10.0	16 19.71	14 47 47.81
Sun.	3	14 35 24.78	15 13 30.9	16 10.2	16 19.58	14 51 44.36
Mon.	4	14 39 22.26	15 32 1.9	16 10.5	16 18.65	14 55 40.92
Tues.	5	14 43 20.56	15 50 17.5	16 10.7	16 16.91	14 59 37.47
Wed.	6	14 47 19.69	16 8 17.3	16 11.0	16 14.33	15 3 34.03
Thur.	7	14 51 19.66	16 26 0.8	16 11.2	16 10.92	15 7 30.58
Frid.	8	14 55 20.46	16 43 27.7	16 11.5	16 6.67	15 11 27.14
Sat.	9	14 59 22.12	17 0 37.6	16 11.7	16 1.57	15 15 23.69
Sun.	10	15 3 24.63	17 17 30.2	16 11.9	15 55.61	15 19 20.25
Mon.	11	15 7 28.00	17 34 5.0	16 12.1	15 48.80	15 23 16.80
Tues.	12	15 11 32.24	17 50 21.6	16 12.3	15 41.12	15 27 13.36
Wed.	13	15 15 37.33	18 6 19.7	16 12.5	15 32.59	15 31 9.92
Thur.	14	15 19 43.29	18 21 58.9	16 12.8	15 23.19	15 35 0.47
Frid.	15	15 23 50.10	18 37 18.7	16 13.0	15 12.93	15 39 3.03
Sat.	16	15 27 57.77	18 52 18.9	16 13.2	15 1.81	15 42 59.58
Sun.	17	15 32 6.30	19 6 58.9	16 13.4	14 49.84	15 46 56.14
Mon.	18	15 36 15.68	19 21 18.5	16 13.6	14 37.02	15 50 52.70
Tues.	19	15 40 25.90	19 35 17.2	16 13.7	14 23.36	15 54 49.25
Wed.	20	15 44 36.95	19 48 54.6	16 13.9	14 8.86	15 58 45.81
Thur.	21	15 48 48.83	20 2 10.5	16 14.1	13 53.54	16 2 42.37
Frid.	22	15 53 1.51	20 15 4.4	16 14.3	13 37.41	16 6 38.92
Sat.	23	15 57 14.99	20 27 35.9	16 14.5	13 20.49	16 10 35.48
Sun.	24	16 1 29.24	20 39 44.7	16 14.7	13 2.80	16 14 32.04
Mon.	25	16 5 44.24	20 51 30.4	16 14.9	12 44.35	16 18 28.59
Tues.	26	16 9 59.98	21 2 52.7	16 15.0	12 25.17	16 22 25.15
Wed.	27	16 14 16.43	21 13 51.1	16 15.2	12 5.28	16 26 21.71
Thur.	28	16 18 33.57	21 24 25.5	16 15.4	11 44.70	16 30 18.26
Frid.	29	16 22 51.37	21 34 35.4	16 15.5	11 23.45	16 34 14.82
Sat.	30	16 27 9.83	21 44 20.5	16 15.7	11 1.55	16 38 11.38
Sun.	31	16 31 28.92	S. 21 53 40.6	16 15.9	10 39.02	16 42 7.94

* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	219 16 55.5	S. 0° 56'	9.9964372	9 14 37.64	15 57.4	15 53.6	58 27.5	58 13.6
2	220 17 2.4	0° 63'	9.9963237	9 10 41.73	15 49.7	15 45.8	57 59.4	57 45.1
3	221 17 10.8	0° 67'	9.9962114	9 6 45.82	15 41.8	15 37.9	57 30.6	57 16.1
4	222 17 20.7	0° 69'	9.9961007	9 2 49.91	15 33.9	15 29.9	57 1.5	56 46.9
5	223 17 32.3	0° 67'	9.9959916	8 58 54.00	15 25.9	15 22.0	56 32.3	56 17.8
6	224 17 45.5	0° 62'	9.9958842	8 54 58.09	15 18.0	15 14.1	56 3.3	55 49.1
7	225 18 0.5	0° 55'	9.9957785	8 51 2.18	15 10.3	15 6.7	55 35.2	55 21.7
8	226 18 17.3	0° 46'	9.9956747	8 47 6.28	15 3.1	14 59.8	55 8.7	54 56.5
9	227 18 35.9	0° 36'	9.9955727	8 43 10.37	14 56.7	14 53.9	54 45.2	54 35.0
10	228 18 56.3	0° 25'	9.9954725	8 39 14.46	14 51.5	14 49.5	54 26.1	54 18.7
11	229 19 18.5	0° 13'	9.9953741	8 35 18.55	14 47.9	14 46.8	54 12.9	54 8.9
12	230 19 42.5	S. 0° 01'	9.9952774	8 31 22.64	14 46.3	14 46.3	54 7.0	54 7.3
13	231 20 8.4	N. 0° 10'	9.9951824	8 27 26.73	14 47.0	14 48.4	54 9.8	54 14.8
14	232 20 36.1	0° 21'	9.9950891	8 23 30.82	14 50.4	14 53.1	54 22.2	54 32.2
15	233 21 5.6	0° 31'	9.9949974	8 19 34.91	14 56.6	15 0.7	54 44.8	54 59.9
16	234 21 37.0	0° 38'	9.9949073	8 15 38.99	15 5.5	15 10.9	55 17.5	55 37.3
17	235 22 10.1	0° 43'	9.9948186	8 11 43.08	15 16.9	15 23.4	55 59.3	56 23.2
18	236 22 45.0	0° 46'	9.9947312	8 7 47.17	15 30.4	15 37.6	56 48.6	57 15.2
19	237 23 21.6	0° 47'	9.9946451	8 3 51.26	15 45.1	15 52.6	57 42.5	58 9.9
20	238 24 0.0	0° 44'	9.9945602	7 59 55.35	15 59.9	16 7.0	58 36.9	59 2.9
21	239 24 40.0	0° 38'	9.9944763	7 55 59.44	16 13.6	16 19.6	59 27.1	59 49.1
22	240 25 21.6	0° 29'	9.9943935	7 52 3.53	16 24.8	16 29.0	60 8.1	60 23.6
23	241 26 4.7	0° 18'	9.9943118	7 48 7.62	16 32.2	16 34.3	60 35.3	60 42.9
24	242 26 49.1	N. 0° 05'	9.9942311	7 44 11.71	16 35.2	16 35.0	60 46.2	60 45.3
25	243 27 34.8	S. 0° 09'	9.9941514	7 40 15.80	16 33.6	16 31.2	60 40.3	60 31.6
26	244 28 21.5	0° 23'	9.9940729	7 36 19.89	16 27.9	16 23.9	60 19.5	60 4.6
27	245 29 9.3	0° 36'	9.9939956	7 32 23.98	16 19.2	16 14.0	59 47.4	59 28.4
28	246 29 58.0	0° 47'	9.9939199	7 28 28.07	16 8.4	16 2.7	59 8.1	58 47.1
29	247 30 47.5	0° 55'	9.9938459	7 24 32.15	15 56.9	15 51.0	58 25.7	58 4.3
30	248 31 37.8	0° 59'	9.9937737	7 20 36.24	15 45.3	15 39.7	57 43.3	57 22.9
31	249 32 29.0	S. 0° 61'	9.9937035	7 16 40.33	15 34.4	15 29.2	57 3.3	56 44.4

MEAN TIME.

THE MOON'S

Day of the Month.	THE MOON'S											
	Longitude.			Latitude.			Age.	Meridian Passage.				
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Upper.	Lower.			
	° ' "	° ' "		° ' "	° ' "		d	h m	h m			
1	324 3 5.7	330 55 27.8	S.	3 53 3.9	S.	4 15 15.3	7.9	7 22.6	19 48.4			
2	337 45 8.7	344 32 6.4		4 33 38.7		4 48 2.8	8.9	8 13.3	20 37.6			
3	351 16 18.2	357 57 39.9		4 58 20.5		5 4 28.1	9.9	9 1.3	21 24.5			
4	4 36 6.5	11 11 32.5		5 6 26.1		5 4 17.5	10.9	9 47.4	22 10.0			
5	17 43 51.8	24 12 58.2		4 58 10.3		4 48 14.1	11.9	10 32.5	22 55.0			
6	30 38 46.4	37 1 12.8		4 34 42.0		4 17 49.4	12.9	11 17.6	23 40.3			
7	43 20 14.6	49 35 52.3		3 57 54.0		3 35 14.6	13.9	12 3.2	* *			
8	55 48 8.4	61 57 9.2		3 10 11.3		2 43 5.1	14.9	12 49.8	0 26.4			
9	68 3 3.7	74 6 4.9		2 14 17.2		1 44 9.0	15.9	13 37.7	1 13.6			
10	80 6 28.7	86 4 34.9		1 13 1.2	S.	0 41 14.3	16.9	14 26.5	2 2.0			
11	92 0 46.4	97 55 29.8	S.	0 9 8.3	N.	0 22 58.0	17.9	15 15.8	2 51.1			
12	103 49 13.8	109 42 30.7	N.	0 54 46.1		1 25 58.3	18.9	16 5.1	3 40.5			
13	115 35 54.7	121 30 0.9		1 56 17.3		2 25 26.3	19.9	16 53.6	4 29.5			
14	127 25 28.2	133 22 55.1		2 53 9.0		3 19 8.4	20.9	17 41.1	5 17.5			
15	139 23 0.9	145 26 24.9		3 43 8.6		4 4 52.3	21.9	18 27.6	6 4.5			
16	151 33 45.6	157 45 40.0		4 24 3.0		4 40 23.3	22.9	19 13.2	6 50.4			
17	164 2 42.6	170 25 23.8		4 53 35.9		5 3 23.7	23.9	19 58.6	7 35.8			
18	176 54 10.1	183 29 21.5		5 9 29.9		5 11 38.9	24.9	20 44.6	8 21.4			
19	190 11 11.2	196 59 43.9		5 9 36.8		5 3 12.4	25.9	21 32.1	9 8.1			
20	203 54 55.5	210 56 31.4		4 52 18.2		4 36 51.0	26.9	22 22.3	9 56.8			
21	218 4 7.9	225 17 10.5		4 16 53.9		3 52 36.2	27.9	23 16.0	10 48.6			
22	232 34 56.2	239 56 33.9		3 24 14.7		2 52 13.4	28.9	* *	11 44.3			
23	247 21 6.7	254 47 34.3		2 17 3.5		1 39 22.3	0.4	0 13.7	12 44.0			
24	262 14 54.1	269 42 5.5	N.	0 59 52.4	N.	0 19 19.5	1.4	1 15.1	13 46.7			
25	277 8 10.4	284 32 16.3	S.	0 21 29.3	S.	1 1 47.0	2.4	2 18.6	14 50.3			
26	291 53 36.9	299 11 33.8		1 40 49.5		2 17 55.6	3.4	3 21.7	15 52.5			
27	306 25 35.9	313 35 20.6		2 52 29.2		3 23 59.4	4.4	4 22.3	16 51.1			
28	320 40 31.8	327 41 1.1		3 52 1.1		4 16 14.6	5.4	5 18.9	17 45.5			
29	334 36 44.6	341 27 44.5		4 36 25.8		4 52 25.5	6.4	6 11.2	18 36.0			
30	348 14 5.6	354 55 56.5		5 4 8.5		5 11 34.1	7.4	7 0.0	19 23.4			
31	1 33 27.3	8 6 49.2	S.	5 14 44.7	S.	5 13 45.8	8.4	7 46.2	20 8.7			

The Moon's Longitude and Latitude are from HANSEN'S Tables *direct*; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 1.					SUNDAY 3.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	21 50 49.73	23.066	S. 17 10 28.5	97.14	0	23 35 49.31	20.844	S. 8 1 52.8	126.56
1	21 53 7.96	23.012	17 0 42.9	98.06	1	23 37 54.27	20.810	7 49 12.5	126.88
2	21 55 25.87	22.958	16 50 51.8	98.97	2	23 39 59.03	20.776	7 36 30.3	127.18
3	21 57 43.45	22.903	16 40 55.3	99.86	3	23 42 3.58	20.743	7 23 46.4	127.46
4	22 0 0.71	22.850	16 30 53.5	100.73	4	23 44 7.94	20.710	7 11 0.8	127.74
5	22 2 17.65	22.796	16 20 46.5	101.60	5	23 46 12.10	20.678	6 58 13.5	128.01
6	22 4 34.26	22.743	16 10 34.3	102.45	6	23 48 16.07	20.647	6 45 24.7	128.26
7	22 6 50.56	22.689	16 0 17.1	103.28	7	23 50 19.86	20.617	6 32 34.4	128.50
8	22 9 6.53	22.636	15 49 54.9	104.11	8	23 52 23.47	20.586	6 19 42.7	128.73
9	22 11 22.19	22.583	15 39 27.8	104.92	9	23 54 26.89	20.556	6 6 49.6	128.96
10	22 13 37.53	22.531	15 28 55.9	105.72	10	23 56 30.14	20.527	5 53 55.2	129.17
11	22 15 52.56	22.478	15 18 19.2	106.51	11	23 58 33.21	20.498	5 40 59.6	129.37
12	22 18 7.27	22.427	15 7 37.8	107.28	12	0 0 36.12	20.471	5 28 2.8	129.55
13	22 20 21.68	22.375	14 56 51.9	108.03	13	0 2 38.86	20.443	5 15 5.0	129.73
14	22 22 35.77	22.323	14 46 1.5	108.78	14	0 4 41.44	20.417	5 2 6.1	129.89
15	22 24 49.56	22.273	14 35 6.6	109.51	15	0 6 43.86	20.390	4 49 6.3	130.04
16	22 27 3.05	22.223	14 24 7.4	110.23	16	0 8 46.12	20.364	4 36 5.6	130.18
17	22 29 16.24	22.173	14 13 3.9	110.93	17	0 10 48.23	20.340	4 23 4.1	130.32
18	22 31 29.12	22.123	14 1 56.2	111.63	18	0 12 50.20	20.316	4 10 1.8	130.44
19	22 33 41.71	22.073	13 50 44.4	112.30	19	0 14 52.02	20.292	3 56 58.8	130.56
20	22 35 54.00	22.024	13 39 28.6	112.97	20	0 16 53.70	20.268	3 43 55.1	130.66
21	22 38 6.00	21.975	13 28 8.8	113.63	21	0 18 55.24	20.246	3 30 50.9	130.75
22	22 40 17.70	21.927	13 16 45.1	114.27	22	0 20 56.65	20.223	3 17 46.1	130.83
23	22 42 29.12	21.879	S. 13 5 17.6	114.89	23	0 22 57.92	20.202	S. 3 4 40.9	130.89
SATURDAY 2.					MONDAY 4.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	22 44 40.25	21.832	S. 12 53 46.4	115.51	0	0 24 59.07	20.182	S. 2 51 35.4	130.95
1	22 46 51.10	21.785	12 42 11.5	116.11	1	0 27 0.10	20.161	2 38 29.5	131.00
2	22 49 1.67	21.738	12 30 33.1	116.69	2	0 29 1.00	20.141	2 25 23.4	131.03
3	22 51 11.96	21.693	12 18 51.2	117.27	3	0 31 1.79	20.123	2 12 17.1	131.07
4	22 53 21.98	21.647	12 7 5.8	117.84	4	0 33 2.47	20.104	1 59 10.6	131.08
5	22 55 31.72	21.602	11 55 17.1	118.39	5	0 35 3.04	20.087	1 46 4.1	131.08
6	22 57 41.20	21.558	11 43 25.1	118.93	6	0 37 3.51	20.069	1 32 57.6	131.08
7	22 59 50.41	21.513	11 31 29.9	119.46	7	0 39 3.87	20.052	1 19 51.1	131.08
8	23 1 59.36	21.469	11 19 31.6	119.98	8	0 41 4.13	20.036	1 6 44.7	131.05
9	23 4 8.04	21.426	11 7 30.2	120.48	9	0 43 4.30	20.021	0 53 38.5	131.01
10	23 6 16.47	21.384	10 55 25.8	120.97	10	0 45 4.38	20.006	0 40 32.6	130.97
11	23 8 24.65	21.343	10 43 18.5	121.45	11	0 47 4.37	19.991	0 27 26.9	130.92
12	23 10 32.58	21.301	10 31 8.4	121.91	12	0 49 4.27	19.977	0 14 21.6	130.84
13	23 12 40.26	21.259	10 18 55.6	122.37	13	0 51 4.09	19.964	S. 0 1 16.8	130.77
14	23 14 47.69	21.219	10 6 40.0	122.81	14	0 53 3.84	19.952	N. 0 11 47.6	130.68
15	23 16 54.89	21.179	9 54 21.9	123.23	15	0 55 3.51	19.940	0 24 51.4	130.58
16	23 19 1.84	21.139	9 42 1.2	123.65	16	0 57 3.12	19.928	0 12 54.6	130.48
17	23 21 8.56	21.101	9 29 38.1	124.06	17	0 59 2.65	19.917	0 50 57.2	130.37
18	23 23 15.05	21.063	9 17 12.5	124.46	18	1 1 2.12	19.907	1 3 59.1	130.24
19	23 25 21.31	21.025	9 4 44.6	124.83	19	1 3 1.53	19.897	1 17 0.1	130.11
20	23 27 27.35	20.988	8 52 14.5	125.20	20	1 5 0.88	19.888	1 30 0.4	129.97
21	23 29 33.16	20.951	8 39 42.2	125.57	21	1 7 0.18	19.879	1 42 59.7	129.81
22	23 31 38.76	20.915	8 27 7.7	125.92	22	1 8 59.43	19.871	1 55 58.1	129.65
23	23 33 44.14	20.879	8 14 31.2	126.24	23	1 10 58.63	19.863	2 8 55.5	129.48
24	23 35 49.31	20.844	S. 8 1 52.8	126.56	24	1 12 57.79	19.856	N. 2 21 51.8	129.29

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 5.					THURSDAY 7.				
	<i>h m s</i>		<i>° ' "</i>			<i>h m s</i>		<i>° ' "</i>	
0	1 12 57.79	19.856	N. 2 21 51.8	129.29	0	2 48 22.87	20.068	N. 12 3 56.1	109.85
1	1 14 56.90	19.849	2 34 47.0	129.10	1	2 50 23.32	20.082	12 14 53.4	109.23
2	1 16 55.98	19.843	2 47 41.0	128.90	2	2 52 23.85	20.095	12 25 46.9	108.61
3	1 18 55.02	19.838	3 0 33.8	128.69	3	2 54 24.46	20.110	12 36 36.7	107.98
4	1 20 54.03	19.833	3 13 25.3	128.47	4	2 56 25.17	20.125	12 47 22.7	107.35
5	1 22 53.01	19.828	3 26 15.4	128.23	5	2 58 25.96	20.139	12 58 4.9	106.70
6	1 24 51.97	19.824	3 39 4.1	127.99	6	3 0 26.84	20.154	13 8 43.1	106.04
7	1 26 50.90	19.820	3 51 51.3	127.75	7	3 2 27.81	20.170	13 19 17.4	105.38
8	1 28 49.81	19.818	4 4 37.1	127.49	8	3 4 28.88	20.186	13 29 47.7	104.72
9	1 30 48.71	19.816	4 17 21.2	127.22	9	3 6 30.04	20.202	13 40 14.0	104.04
10	1 32 47.60	19.813	4 30 3.7	126.95	10	3 8 31.30	20.218	13 50 36.2	103.36
11	1 34 46.47	19.812	4 42 44.6	126.66	11	3 10 32.65	20.233	14 0 54.3	102.67
12	1 36 45.34	19.811	4 55 23.6	126.36	12	3 12 34.10	20.250	14 11 8.2	101.97
13	1 38 44.20	19.811	5 8 0.9	126.06	13	3 14 35.65	20.267	14 21 17.9	101.26
14	1 40 43.07	19.811	5 20 36.3	125.74	14	3 16 37.30	20.283	14 31 23.3	100.54
15	1 42 41.93	19.811	5 33 9.8	125.42	15	3 18 39.05	20.301	14 41 24.4	99.83
16	1 44 40.80	19.813	5 45 41.3	125.08	16	3 20 40.91	20.318	14 51 21.2	99.10
17	1 46 39.68	19.814	5 58 10.8	124.75	17	3 22 42.87	20.335	15 1 13.6	98.36
18	1 48 38.57	19.816	6 10 38.3	124.41	18	3 24 44.93	20.353	15 11 1.5	97.62
19	1 50 37.47	19.818	6 23 3.7	124.04	19	3 26 47.10	20.371	15 20 45.0	96.87
20	1 52 36.39	19.822	6 35 26.8	123.67	20	3 28 49.38	20.388	15 30 23.9	96.10
21	1 54 35.33	19.825	6 47 47.7	123.29	21	3 30 51.76	20.407	15 39 58.2	95.33
22	1 56 34.29	19.828	7 0 6.3	122.91	22	3 32 54.26	20.425	15 49 27.9	94.57
23	1 58 33.27	19.832	N. 7 12 22.6	122.52	23	3 34 56.86	20.443	N. 15 58 53.0	93.79
WEDNESDAY 6.					FRIDAY 8.				
	<i>h m s</i>		<i>° ' "</i>			<i>h m s</i>		<i>° ' "</i>	
0	2 0 32.27	19.837	N. 7 24 36.5	122.12	0	3 36 59.57	20.461	N. 16 8 13.4	93.00
1	2 2 31.31	19.843	7 36 48.0	121.70	1	3 39 2.39	20.480	16 17 29.0	92.21
2	2 4 30.38	19.848	7 48 56.9	121.28	2	3 41 5.33	20.499	16 26 39.9	91.41
3	2 6 29.49	19.854	8 1 3.3	120.85	3	3 43 8.38	20.518	16 35 45.9	90.60
4	2 8 28.63	19.861	8 13 7.1	120.41	4	3 45 11.54	20.536	16 44 47.1	89.78
5	2 10 27.82	19.868	8 25 8.2	119.96	5	3 47 14.81	20.554	16 53 43.3	88.96
6	2 12 27.04	19.874	8 37 6.6	119.51	6	3 49 18.19	20.573	17 2 34.6	88.14
7	2 14 26.31	19.883	8 49 2.3	119.04	7	3 51 21.69	20.593	17 11 21.0	87.31
8	2 16 25.63	19.890	9 0 55.1	118.57	8	3 53 25.30	20.611	17 20 2.3	86.46
9	2 18 24.99	19.898	9 12 45.1	118.08	9	3 55 29.02	20.630	17 28 38.5	85.62
10	2 20 24.41	19.908	9 24 32.1	117.59	10	3 57 32.86	20.649	17 37 9.7	84.77
11	2 22 23.88	19.916	9 36 16.2	117.09	11	3 59 36.81	20.668	17 45 35.7	83.91
12	2 24 23.40	19.926	9 47 57.2	116.58	12	4 1 40.87	20.687	17 53 50.6	83.04
13	2 26 22.99	19.936	9 59 35.2	116.08	13	4 3 45.05	20.706	18 2 12.2	82.17
14	2 28 22.63	19.946	10 11 10.1	115.55	14	4 5 49.34	20.725	18 10 22.6	81.29
15	2 30 22.34	19.957	10 22 41.8	115.01	15	4 7 53.75	20.744	18 18 27.7	80.41
16	2 32 22.11	19.968	10 34 10.2	114.47	16	4 9 58.27	20.763	18 26 27.5	79.52
17	2 34 21.95	19.979	10 45 35.4	113.93	17	4 12 2.90	20.782	18 34 21.9	78.62
18	2 36 21.86	19.991	10 56 57.3	113.38	18	4 14 7.65	20.801	18 42 10.9	77.72
19	2 38 21.84	20.003	11 8 15.9	112.81	19	4 16 12.51	20.819	18 49 54.5	76.81
20	2 40 21.89	20.015	11 19 31.0	112.23	20	4 18 17.48	20.838	18 57 32.6	75.89
21	2 42 22.02	20.028	11 30 42.6	111.64	21	4 20 22.56	20.856	19 5 5.2	74.98
22	2 44 22.23	20.041	11 41 50.7	111.05	22	4 22 27.75	20.875	19 12 32.3	74.05
23	2 46 22.51	20.053	11 52 55.2	110.45	23	4 24 33.06	20.893	19 19 53.8	73.12
24	2 48 22.87	20.068	N. 12 3 56.1	109.85	24	4 26 38.47	20.912	N. 19 27 9.7	72.18

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 9.					MONDAY 11.				
0	4 26 38.47	20.912	N.19 27 9.7	72.18	0	6 8 44.83	21.521	N.23 17 7.3	22.30
1	4 28 44.00	20.930	19 34 20.0	71.24	1	6 10 53.97	21.526	23 19 17.8	21.19
2	4 30 49.63	20.948	19 41 24.6	70.29	2	6 13 3.14	21.530	23 21 21.6	20.08
3	4 32 55.38	20.967	19 48 23.5	69.34	3	6 15 12.33	21.533	23 23 18.8	18.98
4	4 35 1.23	20.984	19 55 16.7	68.38	4	6 17 21.54	21.537	23 25 9.3	17.86
5	4 37 7.19	21.002	20 2 4.1	67.42	5	6 19 30.77	21.540	23 26 53.1	16.75
6	4 39 13.25	21.019	20 8 45.7	66.45	6	6 21 40.02	21.543	23 28 30.3	15.64
7	4 41 19.42	21.037	20 15 21.5	65.48	7	6 23 49.28	21.545	23 30 0.8	14.53
8	4 43 25.69	21.054	20 21 51.4	64.50	8	6 25 58.54	21.545	23 31 24.6	13.42
9	4 45 32.07	21.071	20 28 15.5	63.52	9	6 28 7.82	21.547	23 32 41.8	12.31
10	4 47 38.54	21.088	20 34 33.6	62.53	10	6 30 17.10	21.548	23 33 52.3	11.19
11	4 49 45.12	21.104	20 40 45.8	61.53	11	6 32 26.39	21.548	23 34 56.1	10.08
12	4 51 51.79	21.121	20 46 52.0	60.54	12	6 34 35.67	21.547	23 35 53.2	8.96
13	4 53 58.57	21.138	20 52 52.3	59.54	13	6 36 44.95	21.547	23 36 43.6	7.84
14	4 56 5.44	21.153	20 58 46.5	58.53	14	6 38 54.23	21.546	23 37 27.3	6.73
15	4 58 12.41	21.169	21 4 34.7	57.52	15	6 41 3.50	21.544	23 38 4.4	5.62
16	5 0 19.47	21.184	21 10 16.7	56.50	16	6 43 12.76	21.543	23 38 34.7	4.50
17	5 2 26.62	21.200	21 15 52.7	55.49	17	6 45 22.01	21.540	23 38 58.4	3.39
18	5 4 33.87	21.215	21 21 22.6	54.47	18	6 47 31.24	21.538	23 39 15.4	2.28
19	5 6 41.20	21.230	21 26 46.3	53.43	19	6 49 40.46	21.535	23 39 25.7	1.16
20	5 8 48.63	21.245	21 32 3.8	52.41	20	6 51 49.66	21.532	23 39 29.3	0.04
21	5 10 56.14	21.259	21 37 15.2	51.38	21	6 53 58.84	21.528	23 39 26.2	1.08
22	5 13 3.74	21.273	21 42 20.3	50.33	22	6 56 7.99	21.523	23 39 16.4	2.18
23	5 15 11.42	21.287	N.21 47 19.2	49.28	23	6 58 17.12	21.518	N.23 39 0.0	3.29
SUNDAY 10.					TUESDAY 12.				
0	5 17 19.18	21.300	N.21 52 11.7	48.23	0	7 0 26.21	21.513	N.23 38 36.9	4.40
1	5 19 27.02	21.313	21 56 58.0	47.19	1	7 2 35.28	21.508	23 38 7.2	5.51
2	5 21 34.94	21.327	22 1 38.0	46.14	2	7 4 44.31	21.503	23 37 30.8	6.62
3	5 23 42.94	21.339	22 6 11.7	45.09	3	7 6 53.31	21.496	23 36 47.8	7.73
4	5 25 51.01	21.352	22 10 39.1	44.03	4	7 9 2.26	21.489	23 35 58.1	8.83
5	5 27 59.16	21.363	22 15 0.1	42.97	5	7 11 11.18	21.483	23 35 1.8	9.94
6	5 30 7.37	21.374	22 19 14.7	41.90	6	7 13 20.05	21.475	23 33 58.8	11.05
7	5 32 15.65	21.386	22 23 22.9	40.83	7	7 15 28.88	21.468	23 32 49.2	12.14
8	5 34 24.00	21.398	22 27 24.6	39.76	8	7 17 37.66	21.459	23 31 33.1	13.24
9	5 36 32.42	21.408	22 31 20.0	38.69	9	7 19 46.39	21.451	23 30 10.3	14.35
10	5 38 40.89	21.417	22 35 8.9	37.61	10	7 21 55.07	21.442	23 28 40.9	15.45
11	5 40 49.42	21.427	22 38 51.3	36.53	11	7 24 3.69	21.432	23 27 4.9	16.54
12	5 42 58.01	21.437	22 42 27.2	35.44	12	7 26 12.25	21.423	23 25 22.4	17.63
13	5 45 6.66	21.446	22 45 56.6	34.36	13	7 28 20.76	21.413	23 23 33.3	18.73
14	5 47 15.36	21.455	22 49 19.5	33.28	14	7 30 29.21	21.403	23 21 37.6	19.83
15	5 49 24.12	21.463	22 52 35.9	32.18	15	7 32 37.60	21.393	23 19 35.4	20.91
16	5 51 32.92	21.471	22 55 45.7	31.08	16	7 34 45.92	21.381	23 17 26.7	22.00
17	5 53 41.77	21.478	22 58 48.9	29.99	17	7 36 54.17	21.370	23 15 11.4	23.08
18	5 55 50.66	21.486	23 1 45.6	28.91	18	7 39 2.36	21.358	23 12 49.7	24.17
19	5 57 59.60	21.493	23 4 35.8	27.81	19	7 41 10.47	21.346	23 10 21.4	25.25
20	6 0 8.58	21.499	23 7 19.3	26.70	20	7 43 18.51	21.334	23 7 46.7	26.33
21	6 2 17.59	21.505	23 9 56.2	25.60	21	7 45 26.48	21.323	23 5 5.5	27.40
22	6 4 26.64	21.511	23 12 26.5	24.50	22	7 47 34.38	21.310	23 2 17.9	28.48
23	6 6 35.72	21.516	23 14 50.2	23.40	23	7 49 42.20	21.296	22 59 23.8	29.54
24	6 8 44.83	21.521	N.23 17 7.3	22.30	24	7 51 49.93	21.283	N.22 56 23.4	30.60

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 13.					FRIDAY 15.				
0	7 51 49.93	21.283	N.22 56 23.4	30.60	0	9 32 6.70	20.473	N.18 32 47.5	77.73
1	7 53 57.59	21.269	22 53 16.6	31.68	1	9 34 9.49	20.456	18 24 58.5	78.61
2	7 56 5.16	21.255	22 50 3.3	32.74	2	9 36 12.17	20.438	18 17 4.2	79.48
3	7 58 12.65	21.241	22 46 43.7	33.79	3	9 38 14.75	20.423	18 9 4.7	80.35
4	8 0 20.05	21.226	22 43 17.8	34.85	4	9 40 17.24	20.407	18 1 0.0	81.21
5	8 2 27.36	21.212	22 39 45.5	35.91	5	9 42 19.63	20.390	17 52 50.2	82.07
6	8 4 34.59	21.197	22 36 6.9	36.96	6	9 44 21.92	20.373	17 44 35.2	82.93
7	8 6 41.72	21.182	22 32 22.0	38.00	7	9 46 24.11	20.358	17 36 15.1	83.78
8	8 8 48.77	21.167	22 28 30.9	39.04	8	9 48 26.21	20.343	17 27 49.9	84.62
9	8 10 55.72	21.151	22 24 33.5	40.09	9	9 50 28.22	20.327	17 19 19.7	85.46
10	8 13 2.58	21.135	22 20 29.8	41.13	10	9 52 30.13	20.311	17 10 44.4	86.29
11	8 15 9.34	21.119	22 16 20.0	42.16	11	9 54 31.95	20.296	17 2 4.2	87.12
12	8 17 16.01	21.103	22 12 3.9	43.20	12	9 56 33.68	20.281	16 53 19.0	87.94
13	8 19 22.58	21.087	22 7 41.6	44.23	13	9 58 35.32	20.267	16 44 28.9	88.76
14	8 21 29.05	21.071	22 3 13.2	45.24	14	10 0 36.88	20.253	16 35 33.9	89.58
15	8 23 35.43	21.054	21 58 38.7	46.27	15	10 2 38.35	20.238	16 26 34.0	90.39
16	8 25 41.70	21.037	21 53 58.0	47.28	16	10 4 39.74	20.225	16 17 29.2	91.19
17	8 27 47.87	21.020	21 49 11.3	48.30	17	10 6 41.05	20.211	16 8 19.7	91.98
18	8 29 53.94	21.003	21 44 18.4	49.32	18	10 8 42.27	20.198	15 59 5.4	92.78
19	8 31 59.91	20.987	21 39 19.5	50.32	19	10 10 43.42	20.185	15 49 46.4	93.57
20	8 34 5.78	20.969	21 34 14.6	51.32	20	10 12 44.49	20.173	15 40 22.6	94.35
21	8 36 11.54	20.952	21 29 3.7	52.32	21	10 14 45.49	20.160	15 30 54.2	95.13
22	8 38 17.20	20.934	21 23 46.8	53.32	22	10 16 46.41	20.148	15 21 21.1	95.90
23	8 40 22.75	20.917	N.21 18 23.9	54.30	23	10 18 47.26	20.137	N.15 11 43.4	96.66
THURSDAY 14.					SATURDAY 16.				
0	8 42 28.20	20.899	N.21 12 55.2	55.28	0	10 20 48.05	20.126	N.15 2 1.2	97.42
1	8 44 33.54	20.881	21 7 20.5	56.27	1	10 22 48.77	20.114	14 52 14.4	98.18
2	8 46 38.77	20.863	21 1 39.9	57.26	2	10 24 49.42	20.103	14 42 23.1	98.93
3	8 48 43.90	20.846	20 55 53.4	58.24	3	10 26 50.00	20.093	14 32 27.2	99.68
4	8 50 48.92	20.828	20 50 1.0	59.21	4	10 28 50.53	20.083	14 22 27.0	100.41
5	8 52 53.83	20.809	20 44 2.9	60.18	5	10 30 50.99	20.073	14 12 22.3	101.15
6	8 54 58.63	20.791	20 37 58.9	61.14	6	10 32 51.40	20.064	14 2 13.2	101.88
7	8 57 3.32	20.773	20 31 49.2	62.09	7	10 34 51.76	20.055	13 51 59.8	102.59
8	8 59 7.91	20.756	20 25 33.8	63.05	8	10 36 52.06	20.046	13 41 42.1	103.32
9	9 1 12.39	20.738	20 19 12.6	64.00	9	10 38 52.31	20.038	13 31 20.0	104.03
10	9 3 16.76	20.719	20 12 45.8	64.94	10	10 40 52.51	20.029	13 20 53.8	104.73
11	9 5 21.02	20.701	20 6 13.3	65.88	11	10 42 52.66	20.022	13 10 23.3	105.43
12	9 7 25.17	20.683	19 59 35.2	66.82	12	10 44 52.77	20.015	12 59 48.6	106.13
13	9 9 29.22	20.665	19 52 51.5	67.76	13	10 46 52.84	20.008	12 49 9.8	106.81
14	9 11 33.15	20.647	19 46 2.1	68.69	14	10 48 52.87	20.003	12 38 26.9	107.49
15	9 13 36.98	20.630	19 39 7.2	69.61	15	10 50 52.87	19.998	12 27 39.9	108.17
16	9 15 40.71	20.613	19 32 6.8	70.53	16	10 52 52.84	19.992	12 16 48.9	108.83
17	9 17 44.33	20.594	19 25 0.9	71.44	17	10 54 52.77	19.987	12 5 53.9	109.50
18	9 19 47.84	20.576	19 17 49.5	72.36	18	10 56 52.68	19.983	11 54 54.9	110.16
19	9 21 51.24	20.558	19 10 32.6	73.27	19	10 58 52.56	19.978	11 43 52.0	110.81
20	9 23 54.54	20.542	19 3 10.3	74.17	20	11 0 52.41	19.974	11 32 45.2	111.45
21	9 25 57.74	20.524	18 55 42.6	75.06	21	11 2 52.25	19.972	11 21 34.6	112.09
22	9 28 0.83	20.507	18 48 9.6	75.95	22	11 4 52.07	19.968	11 10 20.1	112.73
23	9 30 3.82	20.489	18 40 31.2	76.84	23	11 6 51.87	19.967	10 59 1.9	113.35
24	9 32 6.70	20.473	N.18 32 47.5	77.73	24	11 8 51.67	19.965	N.10 47 39.9	113.97

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 17.					TUESDAY 19.				
0	11 8 51.67	19.965	N. 10 47 39.9	113.97	0	12 45 31.27	20.537	N. 0 42 46.4	134.96
1	11 10 51.45	19.963	10 36 14.2	114.58	1	12 47 34.57	20.564	0 29 16.0	135.18
2	11 12 51.23	19.963	10 24 44.9	115.19	2	12 49 38.04	20.593	0 15 44.3	135.38
3	11 14 51.00	19.963	10 13 11.9	115.79	3	12 51 41.68	20.621	N. 0 2 11.4	135.58
4	11 16 50.78	19.963	10 1 35.4	116.38	4	12 53 45.49	20.649	S. 0 11 22.7	135.78
5	11 18 50.55	19.963	9 49 55.3	116.98	5	12 55 49.47	20.679	0 24 57.9	135.95
6	11 20 50.34	19.965	9 38 11.7	117.56	6	12 57 53.64	20.710	0 38 34.1	136.11
7	11 22 50.13	19.967	9 26 24.6	118.13	7	12 59 57.99	20.741	0 52 11.2	136.27
8	11 24 49.94	19.969	9 14 34.1	118.70	8	13 2 2.53	20.773	1 5 49.3	136.42
9	11 26 49.76	19.972	9 2 40.2	119.26	9	13 4 7.26	20.804	1 19 28.2	136.54
10	11 28 49.60	19.975	8 50 43.0	119.81	10	13 6 12.18	20.838	1 33 7.8	136.66
11	11 30 49.46	19.979	8 38 42.5	120.35	11	13 8 17.31	20.872	1 46 48.1	136.78
12	11 32 49.35	19.984	8 26 38.8	120.89	12	13 10 22.64	20.906	2 0 29.1	136.88
13	11 34 49.27	19.989	8 14 31.8	121.43	13	13 12 28.18	20.941	2 14 10.6	136.96
14	11 36 49.22	19.994	8 2 21.7	121.95	14	13 14 33.93	20.977	2 27 52.6	137.03
15	11 38 49.20	20.000	7 50 8.4	122.47	15	13 16 39.90	21.013	2 41 35.0	137.09
16	11 40 49.22	20.007	7 37 52.1	122.98	16	13 18 46.09	21.050	2 55 17.7	137.13
17	11 42 49.28	20.014	7 25 32.7	123.48	17	13 20 52.50	21.088	3 9 0.6	137.18
18	11 44 49.39	20.023	7 13 10.3	123.98	18	13 22 59.15	21.127	3 22 43.8	137.20
19	11 46 49.55	20.030	7 0 45.0	124.47	19	13 25 6.02	21.165	3 36 27.0	137.21
20	11 48 49.75	20.039	6 48 16.7	124.95	20	13 27 13.13	21.205	3 50 10.3	137.21
21	11 50 50.02	20.049	6 35 45.6	125.42	21	13 29 20.48	21.245	4 3 53.5	137.20
22	11 52 50.34	20.058	6 23 11.7	125.88	22	13 31 28.07	21.287	4 17 36.7	137.18
23	11 54 50.72	20.069	N. 6 10 35.0	126.34	23	13 33 35.92	21.328	S. 4 31 19.6	137.13
MONDAY 18.					WEDNESDAY 20.				
0	11 56 51.17	20.081	N. 5 57 55.6	126.79	0	13 35 44.01	21.370	S. 4 45 2.2	137.08
1	11 58 51.69	20.093	5 45 13.5	127.23	1	13 37 52.36	21.413	4 58 44.5	137.01
2	12 0 52.28	20.105	5 32 28.9	127.66	2	13 40 0.97	21.457	5 12 26.3	136.92
3	12 2 52.95	20.119	5 19 41.6	128.09	3	13 42 9.84	21.501	5 26 7.5	136.83
4	12 4 53.70	20.132	5 6 51.8	128.51	4	13 44 18.08	21.546	5 39 48.2	136.72
5	12 6 54.53	20.146	4 53 59.5	128.92	5	13 46 28.39	21.592	5 53 28.1	136.59
6	12 8 55.45	20.161	4 41 4.8	129.32	6	13 48 38.08	21.638	6 7 7.3	136.46
7	12 10 56.46	20.177	4 28 7.7	129.71	7	13 50 48.04	21.684	6 20 45.6	136.30
8	12 12 57.57	20.193	4 15 8.3	130.08	8	13 52 58.29	21.732	6 34 22.9	136.13
9	12 14 58.77	20.209	4 2 6.7	130.46	9	13 55 8.82	21.779	6 47 59.1	135.94
10	12 17 0.08	20.227	3 49 2.8	130.83	10	13 57 19.64	21.828	7 1 34.2	135.75
11	12 19 1.49	20.244	3 35 56.8	131.18	11	13 59 30.75	21.877	7 15 8.1	135.54
12	12 21 3.01	20.263	3 22 48.6	131.53	12	14 1 42.16	21.927	7 28 40.7	135.32
13	12 23 4.65	20.283	3 9 38.4	131.87	13	14 3 53.87	21.978	7 42 11.9	135.07
14	12 25 6.40	20.303	2 56 26.2	132.20	14	14 6 5.89	22.028	7 55 41.5	134.81
15	12 27 8.28	20.323	2 43 12.0	132.52	15	14 8 18.21	22.079	8 9 9.6	134.54
16	12 29 10.28	20.344	2 29 56.0	132.83	16	14 10 30.84	22.132	8 22 36.0	134.25
17	12 31 12.41	20.367	2 16 38.1	133.13	17	14 12 43.79	22.184	8 36 0.6	133.95
18	12 33 14.68	20.389	2 3 18.4	133.42	18	14 14 57.05	22.237	8 49 23.4	133.63
19	12 35 17.08	20.412	1 49 57.0	133.70	19	14 17 10.63	22.291	9 2 44.2	133.29
20	12 37 19.62	20.436	1 36 34.0	133.98	20	14 19 24.54	22.345	9 16 2.9	132.93
21	12 39 22.31	20.460	1 23 9.3	134.24	21	14 21 38.77	22.400	9 29 19.4	132.57
22	12 41 25.14	20.485	1 9 43.1	134.48	22	14 23 53.34	22.455	9 42 33.7	132.18
23	12 43 28.13	20.511	0 56 15.5	134.73	23	14 26 8.23	22.510	9 55 45.6	131.78
24	12 45 31.27	20.537	N. 0 42 46.4	134.96	24	14 28 23.46	22.567	S. 10 8 55.1	131.37

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 21.					SATURDAY 23.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	14 28 23.46	22.567	S. 10 8 55.1	131.37	0	16 23 44.67	25.514	S. 19 17 42.0	90.31
1	14 30 39.03	22.623	10 22 2.0	130.93	1	16 26 17.93	25.573	19 26 40.0	89.02
2	14 32 54.94	22.681	10 35 6.3	130.48	2	16 28 51.54	25.630	19 35 30.2	87.71
3	14 35 11.20	22.738	10 48 7.8	130.01	3	16 31 25.49	25.686	19 44 12.5	86.38
4	14 37 27.80	22.796	11 1 6.4	129.53	4	16 33 59.77	25.741	19 52 46.7	85.03
5	14 39 44.75	22.854	11 14 2.1	129.03	5	16 36 34.38	25.796	20 1 12.8	83.67
6	14 42 2.05	22.913	11 26 54.7	128.50	6	16 39 9.32	25.851	20 9 30.7	82.28
7	14 44 19.71	22.973	11 39 44.1	127.96	7	16 41 44.59	25.904	20 17 40.2	80.89
8	14 46 37.73	23.033	11 52 30.2	127.41	8	16 44 20.17	25.956	20 25 41.4	79.49
9	14 48 56.10	23.093	12 5 13.0	126.84	9	16 46 56.06	26.008	20 33 34.1	78.07
10	14 51 14.84	23.153	12 17 52.3	126.25	10	16 49 32.26	26.058	20 41 18.2	76.63
11	14 53 33.94	23.213	12 30 28.0	125.64	11	16 52 8.76	26.108	20 48 53.6	75.17
12	14 55 53.40	23.274	12 43 0.0	125.02	12	16 54 45.56	26.158	20 56 20.2	73.70
13	14 58 13.23	23.336	12 55 28.2	124.38	13	16 57 22.65	26.206	21 3 38.0	72.22
14	15 0 33.43	23.398	13 7 52.5	123.71	14	17 0 0.03	26.253	21 10 46.8	70.72
15	15 2 54.00	23.460	13 20 12.7	123.03	15	17 2 37.69	26.299	21 17 46.6	69.20
16	15 5 14.95	23.523	13 32 28.8	122.33	16	17 5 15.62	26.344	21 24 37.2	67.68
17	15 7 36.27	23.584	13 44 40.7	121.62	17	17 7 53.82	26.388	21 31 18.7	66.14
18	15 9 57.96	23.647	13 56 48.2	120.88	18	17 10 32.27	26.430	21 37 50.9	64.59
19	15 12 20.03	23.710	14 8 51.2	120.13	19	17 13 10.98	26.473	21 44 13.8	63.03
20	15 14 42.48	23.773	14 20 49.7	119.36	20	17 15 49.94	26.513	21 50 27.3	61.46
21	15 17 5.31	23.836	14 32 43.5	118.57	21	17 18 29.14	26.553	21 56 31.3	59.87
22	15 19 28.51	23.899	14 44 32.5	117.76	22	17 21 8.57	26.591	22 2 25.7	58.27
23	15 21 52.10	23.963	S. 14 56 16.6	116.93	23	17 23 48.23	26.628	S. 22 8 10.5	56.66
FRIDAY 22.					SUNDAY 24.				
	^h ^m ^s		[°] ['] ["]			^h ^m ^s		[°] ['] ["]	
0	15 24 16.07	24.027	S. 15 7 55.7	116.08	0	17 26 28.11	26.664	S. 22 13 45.6	55.03
1	15 26 40.42	24.090	15 19 29.6	115.22	1	17 29 8.20	26.698	22 19 10.9	53.40
2	15 29 5.15	24.153	15 30 58.3	114.34	2	17 31 48.49	26.731	22 24 26.4	51.77
3	15 31 30.26	24.217	15 42 21.7	113.44	3	17 34 28.97	26.763	22 29 32.1	50.12
4	15 33 55.75	24.281	15 53 39.6	112.52	4	17 37 9.64	26.793	22 34 27.8	48.44
5	15 36 21.63	24.345	16 4 51.9	111.58	5	17 39 50.49	26.822	22 39 13.4	46.77
6	15 38 47.89	24.408	16 15 58.6	110.63	6	17 42 31.50	26.849	22 43 49.1	45.10
7	15 41 14.53	24.472	16 26 59.5	109.65	7	17 45 12.68	26.876	22 48 14.6	43.41
8	15 43 41.55	24.535	16 37 54.4	108.66	8	17 47 54.01	26.901	22 52 30.0	41.72
9	15 46 8.95	24.598	16 48 43.4	107.65	9	17 50 35.49	26.924	22 56 35.2	40.02
10	15 48 36.73	24.662	16 59 26.2	106.62	10	17 53 17.10	26.946	23 0 30.2	38.31
11	15 51 4.89	24.725	17 10 2.8	105.58	11	17 55 58.84	26.968	23 4 14.9	36.59
12	15 53 33.43	24.788	17 20 33.1	104.51	12	17 58 40.69	26.985	23 7 49.3	34.87
13	15 56 2.34	24.850	17 30 56.9	103.42	13	18 1 22.66	27.003	23 11 13.3	33.13
14	15 58 31.63	24.913	17 41 14.1	102.32	14	18 4 4.72	27.018	23 14 26.9	31.40
15	16 1 1.29	24.974	17 51 24.7	101.20	15	18 6 46.87	27.033	23 17 30.1	29.67
16	16 3 31.32	25.036	18 1 28.5	100.06	16	18 9 29.11	27.045	23 20 22.9	27.92
17	16 6 1.72	25.098	18 11 25.4	98.90	17	18 12 11.41	27.056	23 23 5.1	26.17
18	16 8 32.49	25.159	18 21 15.3	97.73	18	18 14 53.78	27.066	23 25 36.9	24.43
19	16 11 3.63	25.219	18 30 58.1	96.53	19	18 17 36.20	27.073	23 27 58.2	22.67
20	16 13 35.12	25.279	18 40 33.7	95.33	20	18 20 18.66	27.080	23 30 8.9	20.90
21	16 16 6.98	25.339	18 50 2.0	94.10	21	18 23 1.16	27.085	23 32 9.0	19.13
22	16 18 39.19	25.398	18 59 22.9	92.86	22	18 25 43.68	27.088	23 33 58.5	17.38
23	16 21 11.76	25.457	19 8 36.3	91.59	23	18 28 26.21	27.089	23 35 37.5	15.62
24	16 23 44.67	25.514	S. 19 17 42.0	90.31	24	18 31 8.75	27.089	S. 23 37 5.9	13.85

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 25.					WEDNESDAY 27.				
0	18 31 8.75	27.089	S. 23 37 5.9	13.85	0	20 38 19.04	25.410	S. 21 27 38.2	64.59
1	18 33 51.28	27.088	23 38 23.7	12.08	1	20 40 51.32	25.349	21 21 6.5	65.96
2	18 36 33.80	27.084	23 39 30.8	10.31	2	20 43 23.23	25.288	21 14 26.7	67.31
3	18 39 16.29	27.079	23 40 27.4	8.55	3	20 45 54.77	25.225	21 7 38.8	68.66
4	18 41 58.75	27.073	23 41 13.4	6.78	4	20 48 25.93	25.163	21 0 42.8	69.99
5	18 44 41.16	27.064	23 41 48.7	5.01	5	20 50 56.72	25.100	20 53 38.9	71.30
6	18 47 23.52	27.055	23 42 13.5	3.25	6	20 53 27.13	25.037	20 46 27.2	72.60
7	18 50 5.82	27.043	23 42 27.7	1.49	7	20 55 57.16	24.973	20 39 7.7	73.88
8	18 52 48.04	27.031	23 42 31.4	0.27	8	20 58 26.80	24.908	20 31 40.6	75.15
9	18 55 30.19	27.017	23 42 24.5	2.03	9	21 0 56.05	24.843	20 24 5.9	76.41
10	18 58 12.24	27.000	23 42 7.0	3.78	10	21 3 24.92	24.778	20 16 23.7	77.64
11	19 0 54.19	26.983	23 41 39.1	5.53	11	21 5 53.39	24.712	20 8 34.2	78.87
12	19 3 36.04	26.964	23 41 0.7	7.28	12	21 8 21.46	24.646	20 0 37.3	80.08
13	19 6 17.76	26.943	23 40 11.8	9.02	13	21 10 49.14	24.581	19 52 33.3	81.26
14	19 8 59.35	26.920	23 39 12.5	10.75	14	21 13 16.43	24.515	19 44 22.2	82.44
15	19 11 40.80	26.897	23 38 2.8	12.48	15	21 15 43.32	24.448	19 36 4.0	83.60
16	19 14 22.11	26.872	23 36 42.7	14.22	16	21 18 9.81	24.382	19 27 39.0	84.74
17	19 17 3.26	26.844	23 35 12.2	15.94	17	21 20 35.90	24.315	19 19 7.1	85.87
18	19 19 44.24	26.816	23 33 31.4	17.65	18	21 23 1.59	24.248	19 10 28.5	86.98
19	19 22 25.05	26.787	23 31 40.4	19.36	19	21 25 26.88	24.181	19 1 43.3	88.08
20	19 25 5.68	26.756	23 29 39.1	21.06	20	21 27 51.76	24.114	18 52 51.5	89.18
21	19 27 46.12	26.723	23 27 27.7	22.75	21	21 30 16.25	24.048	18 43 53.2	90.24
22	19 30 26.36	26.690	23 25 6.1	24.44	22	21 32 40.33	23.980	18 34 48.6	91.28
23	19 33 6.40	26.655	S. 23 22 34.4	26.13	23	21 35 4.01	23.913	S. 18 25 37.8	92.33
TUESDAY 26.					THURSDAY 28.				
0	19 35 46.22	26.618	S. 23 19 52.6	27.79	0	21 37 27.29	23.847	S. 18 16 20.7	93.35
1	19 38 25.81	26.580	23 17 0.9	29.45	1	21 39 50.17	23.780	18 6 57.6	94.35
2	19 41 5.18	26.541	23 13 59.2	31.11	2	21 42 12.65	23.713	17 57 28.5	95.34
3	19 43 44.30	26.500	23 10 47.6	32.75	3	21 44 34.72	23.646	17 47 53.5	96.32
4	19 46 23.18	26.459	23 7 26.2	34.38	4	21 46 56.40	23.580	17 38 12.7	97.28
5	19 49 1.81	26.416	23 3 55.1	35.99	5	21 49 17.68	23.513	17 28 26.2	98.22
6	19 51 40.17	26.372	23 0 14.3	37.61	6	21 51 38.56	23.448	17 18 34.1	99.15
7	19 54 18.27	26.328	22 56 23.8	39.22	7	21 53 59.05	23.382	17 8 36.4	100.06
8	19 56 56.10	26.281	22 52 23.7	40.81	8	21 56 19.14	23.315	16 58 33.4	100.95
9	19 59 33.64	26.233	22 48 14.1	42.39	9	21 58 38.83	23.249	16 48 25.0	101.84
10	20 2 10.90	26.185	22 43 55.0	43.96	10	22 0 58.13	23.184	16 38 11.3	102.71
11	20 4 47.86	26.136	22 39 26.6	45.51	11	22 3 17.04	23.119	16 27 52.5	103.56
12	20 7 24.53	26.086	22 34 48.9	47.05	12	22 5 35.56	23.054	16 17 28.6	104.39
13	20 10 0.89	26.033	22 30 2.0	48.58	13	22 7 53.69	22.989	16 6 59.8	105.21
14	20 12 36.93	25.980	22 25 5.9	50.11	14	22 10 11.43	22.925	15 56 26.1	106.02
15	20 15 12.65	25.928	22 20 0.7	51.62	15	22 12 28.79	22.862	15 45 47.6	106.81
16	20 17 48.06	25.873	22 14 46.5	53.11	16	22 14 45.77	22.798	15 35 4.4	107.58
17	20 20 23.13	25.818	22 9 23.4	54.59	17	22 17 2.37	22.735	15 24 16.6	108.34
18	20 22 57.87	25.762	22 3 51.4	56.06	18	22 19 18.59	22.672	15 13 24.3	109.09
19	20 25 32.27	25.705	21 58 10.7	57.51	19	22 21 34.43	22.609	15 2 27.5	109.83
20	20 28 6.33	25.648	21 52 21.3	58.96	20	22 23 49.90	22.548	14 51 26.4	110.54
21	20 30 40.04	25.589	21 46 23.2	60.39	21	22 26 5.00	22.487	14 40 21.0	111.25
22	20 33 13.40	25.530	21 40 16.6	61.80	22	22 28 19.74	22.426	14 29 11.4	111.93
23	20 35 46.40	25.470	21 34 1.6	63.20	23	22 30 34.11	22.365	14 17 57.8	112.61
24	20 38 19.04	25.410	S. 21 27 38.2	64.59	24	22 32 48.12	22.305	S. 14 6 40.1	113.28

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
FRIDAY 29.					SATURDAY 30.				
	^h ^m ^s	^s	[°] ['] ["]	["]		^h ^m ^s	^s	[°] ['] ["]	["]
0	22 32 48.12	22.305	S. 14 6 40.1	113.28	0	23 24 44.23	21.031	S. 9 19 6.7	125.12
1	22 35 1.77	22.246	13 55 18.5	113.92	1	23 26 50.28	20.987	9 6 35.0	125.44
2	22 37 15.07	22.187	13 43 53.1	114.55	2	23 28 56.07	20.943	8 54 1.4	125.76
3	22 39 28.01	22.128	13 32 23.9	115.17	3	23 31 1.59	20.898	8 41 25.9	126.08
4	22 41 40.60	22.070	13 20 51.1	115.78	4	23 33 6.84	20.854	8 28 48.5	126.38
5	22 43 52.85	22.013	13 9 14.6	116.37	5	23 35 11.84	20.813	8 16 9.4	126.66
6	22 46 4.75	21.956	12 57 34.7	116.94	6	23 37 16.59	20.771	8 3 28.6	126.94
7	22 48 16.32	21.899	12 45 51.3	117.51	7	23 39 21.09	20.730	7 50 46.1	127.21
8	22 50 27.54	21.843	12 34 4.6	118.06	8	23 41 25.35	20.689	7 38 2.1	127.47
9	22 52 38.44	21.788	12 22 14.6	118.59	9	23 43 29.36	20.649	7 25 16.5	127.72
10	22 54 49.00	21.733	12 10 21.5	119.12	10	23 45 33.14	20.611	7 12 29.5	127.94
11	22 56 59.23	21.678	11 58 25.2	119.63	11	23 47 36.69	20.573	6 59 41.2	128.16
12	22 59 9.14	21.625	11 46 25.9	120.13	12	23 49 40.01	20.534	6 46 51.6	128.37
13	23 1 18.73	21.573	11 34 23.7	120.61	13	23 51 43.10	20.498	6 34 0.8	128.57
14	23 3 28.01	21.521	11 22 18.6	121.08	14	23 53 45.98	20.462	6 21 8.8	128.76
15	23 5 36.98	21.468	11 10 10.8	121.53	15	23 55 48.64	20.425	6 8 15.7	128.94
16	23 7 45.63	21.417	10 58 0.2	121.98	16	23 57 51.08	20.390	5 55 21.5	129.11
17	23 9 53.98	21.367	10 45 47.0	122.42	17	23 59 53.32	20.357	5 42 26.4	129.26
18	23 12 2.03	21.318	10 33 31.2	122.84	18	0 1 55.36	20.323	5 29 30.4	129.41
19	23 14 9.79	21.268	10 21 12.9	123.25	19	0 3 57.20	20.290	5 16 33.5	129.55
20	23 16 17.25	21.219	10 8 52.2	123.64	20	0 5 58.84	20.258	5 3 35.8	129.68
21	23 18 24.42	21.171	9 56 29.2	124.03	21	0 8 0.30	20.228	4 50 37.4	129.78
22	23 20 31.30	21.124	9 44 3.9	124.40	22	0 10 1.57	20.197	4 37 38.4	129.89
23	23 22 37.91	21.078	9 31 36.4	124.77	23	0 12 2.66	20.167	4 24 38.7	129.99
24	23 24 44.23	21.031	S. 9 19 6.7	125.12	24	0 14 3.57	20.137	S. 4 11 38.5	130.07

PHASES OF THE MOON.

						^h ^m
Nov. 7	○	Full Moon	-	-	-	4 5.2
15	☾	Last Quarter	-	-	-	8 35.8
22	●	New Moon	-	-	-	13 43.6
29	☾	First Quarter	-	-	-	5 28.7

						^h
Nov. 12	☾	Apogee	-	-	-	5
24	☾	Perigee	-	-	-	3

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]		[°] ['] ["]	
1	SUN W.	104 43 48	2754	106 19 16	2763	107 54 33	2772	109 29 38	2780
	Jupiter W.	49 7 27	2469	50 49 25	2477	52 31 10	2485	54 12 45	2494
	α Aquilæ W.	40 18 7	4606	41 20 27	4464	42 24 51	4336	43 31 10	4324
	α Pegasi E.	35 59 35	3956	34 47 12	4108	33 37 18	4279	32 30 6	4476
	α Arietis E.	73 6 0	2564	71 26 16	2576	69 46 48	2587	68 7 35	2599
	Aldebaran E.	103 43 19	2420	102 0 13	2428	100 17 18	2437	98 34 36	2444
2	SUN W.	117 22 9	2825	118 56 5	2835	120 29 48	2843	122 3 20	2853
	Jupiter W.	62 37 43	2534	64 18 9	2543	65 58 23	2551	67 38 25	2559
	α Aquilæ W.	49 25 47	3824	50 40 24	3768	51 56 0	3717	53 12 29	3672
	α Arietis E.	59 55 47	2666	58 18 21	2681	56 41 15	2696	55 4 30	2713
	Aldebaran E.	90 3 48	2484	88 22 12	2492	86 40 48	2500	84 59 35	2509
3	Jupiter W.	75 55 48	2601	77 34 42	2608	79 13 26	2617	80 51 58	2626
	α Aquilæ W.	59 45 28	3508	61 5 43	3485	62 26 24	3466	63 47 26	3448
	α Arietis E.	47 6 40	2811	45 32 27	2835	43 58 45	2861	42 25 36	2890
	Aldebaran E.	76 36 22	2549	74 56 17	2557	73 16 23	2566	71 36 41	2574
4	Jupiter W.	89 1 48	2667	90 39 12	2675	92 16 25	2684	93 53 26	2692
	α Aquilæ W.	70 36 47	3391	71 59 14	3385	73 21 48	3380	74 44 27	3377
	Fomalhaut W.	35 9 57	3210	36 35 54	3174	38 2 34	3143	39 29 52	3116
	α Arietis E.	34 49 57	3076	33 21 18	3127	31 53 41	3185	30 27 14	3250
	Aldebaran E.	63 21 2	2616	61 42 29	2624	60 4 7	2633	58 25 57	2642
	Pollux E.	107 31 38	2626	105 53 18	2635	104 15 10	2643	102 37 13	2650
5	α Aquilæ W.	81 38 13	3379	83 0 54	3382	84 23 31	3387	85 46 2	3393
	Fomalhaut W.	46 53 0	3034	48 22 31	3025	49 52 13	3017	51 22 5	3011
	α Pegasi W.	35 10 52	4179	36 19 38	4075	37 30 4	3982	38 42 1	3903
	Aldebaran E.	50 18 4	2687	48 41 6	2696	47 4 20	2704	45 27 46	2713
	Pollux E.	94 30 10	2692	92 53 19	2701	91 16 40	2708	89 40 11	2717
6	α Aquilæ W.	92 36 39	3436	93 58 14	3447	95 19 37	3460	96 40 46	3474
	Fomalhaut W.	58 52 40	3001	60 22 52	3001	61 53 4	3003	63 23 13	3005
	α Pegasi W.	44 59 9	3626	46 17 15	3589	47 36 1	3556	48 55 23	3527
	Aldebaran E.	37 28 6	2763	35 52 49	2773	34 17 46	2784	32 42 57	2795
	Pollux E.	81 40 42	2761	80 5 23	2770	78 30 16	2779	76 55 21	2788
7	Fomalhaut W.	70 53 6	3024	72 22 49	3029	73 52 26	3034	75 21 56	3040
	α Pegasi W.	55 39 0	3430	57 0 43	3416	58 22 41	3406	59 44 51	3397
	Pollux E.	69 3 43	2834	67 29 59	2843	65 56 27	2852	64 23 7	2862
	Regulus E.	104 57 17	2824	103 23 20	2832	101 49 34	2842	100 16 0	2850
	Saturn E.	109 23 44	2843	107 50 12	2852	106 16 51	2861	104 43 42	2870
8	Fomalhaut W.	82 47 29	3074	84 16 10	3082	85 44 42	3090	87 13 4	3098
	α Pegasi W.	66 37 44	3371	68 0 34	3370	69 23 25	3369	70 46 17	3368
	α Arietis W.	23 35 23	3862	24 49 21	3763	26 5 2	3680	27 22 10	3611
	Pollux E.	56 39 30	2909	55 7 23	2919	53 35 28	2928	52 3 45	2938
	Regulus E.	92 30 56	2894	90 58 29	2901	89 26 12	2911	87 54 7	2919
	Saturn E.	97 0 42	2913	95 28 39	2921	93 56 47	2930	92 25 6	2938
9	Fomalhaut W.	94 32 27	3139	95 59 49	3148	97 27 0	3157	98 54 1	3166
	α Pegasi W.	77 40 28	3378	79 3 10	3380	80 25 49	3385	81 48 23	3389

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
1	Sun W.	111 4 32	2789	112 39 14	2798	114 13 44	2808	115 48 2	2816
	Jupiter W.	55 54 7	2501	57 35 19	2510	59 16 18	2517	60 57 7	2526
	α Aquilæ W.	44 39 13	4126	45 48 50	4037	46 59 53	3958	48 12 14	3887
	α Pegasi E.	31 25 53	4702	30 24 55	4964	29 27 31	5269	28 34 1	5629
	α Arietis E.	66 28 39	2611	64 49 59	2624	63 11 37	2638	61 33 33	2651
	Aldebaran E.	96 52 3	2452	95 9 42	2460	93 27 33	2468	91 45 35	2476
2	Sun W.	123 36 39	2862	125 9 47	2871	126 42 43	2880	128 15 28	2889
	Jupiter W.	69 18 16	2567	70 57 56	2575	72 37 25	2584	74 16 42	2592
	α Aquilæ W.	54 29 46	3631	55 47 47	3595	57 6 27	3563	58 25 42	3535
	α Arietis E.	53 28 7	2730	51 52 7	2749	50 16 32	2769	48 41 23	2789
	Aldebaran E.	83 18 34	2517	81 37 44	2525	79 57 5	2533	78 16 38	2541
3	Jupiter W.	82 30 18	2633	84 8 28	2642	85 46 26	2650	87 24 13	2659
	α Aquilæ W.	65 8 48	3432	66 30 28	3420	67 52 22	3408	69 14 29	3399
	α Arietis E.	40 53 4	2920	39 21 10	2953	37 49 58	2989	36 19 32	3030
	Aldebaran E.	69 57 11	2582	68 17 51	2591	66 38 43	2599	64 59 47	2607
4	Jupiter W.	95 30 17	2701	97 6 55	2710	98 43 22	2718	100 19 38	2726
	α Aquilæ W.	76 7 10	3374	77 29 56	3374	78 52 42	3374	80 15 28	3375
	Fomalhaut W.	40 57 42	3093	42 26 0	3074	43 54 41	3058	45 23 42	3044
	α Arietis E.	29 2 4	3326	27 38 23	3413	26 16 21	3515	24 56 14	3636
	Aldebaran E.	56 47 59	2650	55 10 12	2660	53 32 38	2668	51 55 15	2677
	Pollux E.	100 59 26	2659	99 21 51	2666	97 44 26	2675	96 7 13	2683
5	α Aquilæ W.	87 8 27	3400	88 30 44	3407	89 52 53	3416	91 14 51	3425
	Fomalhaut W.	52 52 4	3007	54 22 8	3003	55 52 17	3001	57 22 28	3001
	α Pegasi W.	39 55 18	3833	41 9 46	3770	42 25 19	3716	43 41 49	3669
	Aldebaran E.	43 51 24	2723	42 15 15	2733	40 39 19	2743	39 3 36	2753
	Pollux E.	88 3 55	2725	86 27 49	2735	84 51 55	2744	83 16 13	2752
6	α Aquilæ W.	98 1 39	3488	99 22 17	3504	100 42 37	3520	102 2 39	3537
	Fomalhaut W.	64 53 20	3007	66 23 24	3011	67 53 23	3015	69 23 17	3019
	α Pegasi W.	50 15 17	3502	51 35 39	3480	52 56 25	3461	54 17 33	3444
	Aldebaran E.	31 8 22	2806	29 34 2	2818	27 59 57	2829	26 26 7	2840
	Pollux E.	75 20 37	2798	73 46 6	2806	72 11 46	2815	70 37 38	2825
7	Fomalhaut W.	76 51 19	3047	78 20 33	3053	79 49 40	3060	81 18 39	3067
	α Pegasi W.	61 7 11	3389	62 29 40	3383	63 52 16	3378	65 14 58	3374
	Pollux E.	62 50 0	2871	61 17 4	2881	59 44 21	2891	58 11 50	2899
	Regulus E.	98 42 37	2859	97 9 25	2867	95 36 24	2876	94 3 34	2885
	Saturn E.	103 10 44	2878	101 37 57	2887	100 5 21	2895	98 32 56	2904
8	Fomalhaut W.	88 41 16	3105	90 9 19	3114	91 37 12	3122	93 4 55	3131
	α Pegasi W.	72 9 10	3369	73 32 2	3370	74 54 53	3372	76 17 42	3374
	α Arietis W.	28 40 32	3555	29 59 56	3506	31 20 13	3465	32 41 16	3431
	Pollux E.	50 32 14	2947	49 0 55	2957	47 29 48	2967	45 58 54	2977
	Regulus E.	86 22 12	2927	84 50 27	2936	83 18 54	2943	81 47 30	2952
	Saturn E.	90 53 35	2946	89 22 15	2954	87 51 5	2962	86 20 5	2971
9	Fomalhaut W.	100 20 51	3175	101 47 30	3184	103 13 58	3193	104 40 15	3202
	α Pegasi W.	83 10 52	3393	84 33 16	3399	85 55 34	3404	87 17 46	3409

MEAN TIME.											
LUNAR DISTANCES.											
Day.	Star's Name and Position.		Noon.	P.L. of diff.	III ^a .	P.L. of diff.	VI ^a .	P.L. of diff.	IX ^a .	P.L. of diff.	
			° ' "		° ' "		° ' "		° ' "		
9	α Arietis	W.	34 2 57	3402	35 25 11	3378	36 47 53	3357	38 10 59	3338	
	Pollux	E.	44 28 12	2986	42 57 42	2996	41 27 24	3005	39 57 18	3016	
	Regulus	E.	80 16 17	2960	78 45 14	2968	77 14 21	2976	75 43 38	2982	
	Saturn	E.	84 49 16	2978	83 18 36	2986	81 48 6	2993	80 17 45	3001	
10	α Pegasi	W.	88 39 51	3415	90 1 50	3423	91 23 41	3429	92 45 25	3437	
	α Arietis	W.	45 10 47	3282	46 35 20	3275	48 0 1	3269	49 24 49	3264	
	Pollux	E.	32 30 2	3069	31 1 15	3082	29 32 43	3094	28 4 26	3107	
	Regulus	E.	68 12 18	3018	66 42 28	3025	65 12 46	3032	63 43 13	3037	
	Saturn	E.	72 48 19	3036	71 18 51	3043	69 49 31	3048	68 20 18	3055	
	Mars	E.	99 39 20	3244	98 14 1	3249	96 48 50	3255	95 23 46	3261	
11	α Arietis	W.	56 30 3	3247	57 55 17	3246	59 20 32	3243	60 45 50	3242	
	Aldebaran	W.	24 18 38	3089	25 47 1	3090	27 15 23	3091	28 43 44	3091	
	Regulus	E.	56 17 11	3065	54 48 18	3069	53 19 31	3073	51 50 49	3078	
	Saturn	E.	60 56 0	3080	59 27 26	3085	57 58 58	3089	56 30 35	3092	
	Mars	E.	88 20 7	3288	86 55 41	3292	85 31 20	3296	84 7 4	3300	
12	α Arietis	W.	67 52 49	3234	69 18 18	3231	70 43 50	3231	72 9 23	3228	
	Aldebaran	W.	36 5 18	3094	37 33 35	3094	39 1 52	3094	40 30 9	3093	
	Regulus	E.	44 28 30	3094	43 0 13	3096	41 31 59	3099	40 3 48	3101	
	Saturn	E.	49 9 40	3107	47 41 39	3109	46 13 40	3110	44 45 42	3111	
	Mars	E.	77 6 40	3313	75 42 44	3314	74 18 49	3316	72 54 56	3316	
	Venus	E.	103 2 7	3565	101 42 55	3567	100 23 45	3568	99 4 36	3568	
	SUN	E.	126 30 25	3475	125 9 33	3476	123 48 42	3476	122 27 51	3477	
13	α Arietis	W.	79 17 50	3215	80 43 41	3213	82 9 35	3209	83 35 33	3205	
	Aldebaran	W.	47 51 51	3086	49 20 17	3083	50 48 47	3081	52 17 20	3078	
	Regulus	E.	32 43 24	3108	31 15 24	3109	29 47 25	3110	28 19 27	3110	
	Saturn	E.	37 26 7	3112	35 58 12	3111	34 30 16	3110	33 2 18	3109	
	Mars	E.	65 55 32	3313	64 31 36	3312	63 7 38	3310	61 43 38	3306	
	Venus	E.	92 28 50	3565	91 9 37	3562	89 50 21	3560	88 31 3	3556	
	SUN	E.	115 43 32	3471	114 22 36	3469	113 1 37	3465	111 40 34	3462	
14	α Arietis	W.	90 46 38	3183	92 13 8	3177	93 39 45	3172	95 6 28	3166	
	Aldebaran	W.	59 41 18	3055	61 10 23	3048	62 39 36	3042	64 8 57	3035	
	Mars	E.	54 42 36	3287	53 18 9	3281	51 53 35	3275	50 28 54	3268	
	Venus	E.	81 53 27	3532	80 33 38	3526	79 13 43	3519	77 53 40	3512	
	SUN	E.	104 54 14	3438	103 32 40	3431	102 10 59	3424	100 49 10	3417	
15	Aldebaran	W.	71 38 0	2994	73 8 20	2985	74 38 52	2974	76 9 37	2964	
	Pollux	W.	27 43 28	3062	29 12 24	3046	30 41 40	3030	32 11 16	3015	
	Mars	E.	43 23 27	3231	41 57 54	3221	40 32 10	3213	39 6 16	3203	
	Venus	E.	71 11 13	3468	69 50 13	3457	68 29 1	3446	67 7 36	3435	
	SUN	E.	93 57 50	3372	92 35 3	3362	91 12 3	3351	89 48 51	3340	
16	Aldebaran	W.	83 46 49	2905	85 19 1	2892	86 51 30	2879	88 24 16	2866	
	Pollux	W.	39 43 58	2939	41 15 28	2924	42 47 17	2908	44 19 26	2892	
	Mars	E.	31 53 49	3153	30 26 43	3142	28 59 24	3132	27 31 53	3121	
	Venus	E.	60 17 11	3371	58 54 21	3356	57 31 14	3342	56 7 51	3326	
	SUN	E.	82 49 24	3276	81 24 45	3262	79 59 50	3247	78 34 37	3233	
17	Aldebaran	W.	96 12 41	2791	97 47 21	2775	99 22 21	2759	100 57 43	2743	
	Pollux	W.	52 5 18	2811	53 39 32	2794	55 14 8	2777	56 49 6	2759	

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
9	α Arietis W.	39 34 26	3323	40 58 11	3311	42 22 10	3299	43 46 23	3289
	Pollux E.	38 27 25	3026	36 57 45	3036	35 28 17	3047	33 59 3	3058
	Regulus E.	74 13 3	2990	72 42 38	2998	71 12 23	3005	69 42 16	3012
	Saturn E.	78 47 34	3009	77 17 32	3016	75 47 39	3023	74 17 55	3030
10	α Pegasi W.	94 7 0	3444	95 28 27	3450	96 49 47	3458	98 10 58	3465
	α Arietis W.	50 49 43	3259	52 14 43	3256	53 39 46	3253	55 4 53	3250
	Pollux E.	26 36 25	3122	25 8 42	3138	23 41 18	3156	22 14 16	3175
	Regulus E.	62 13 46	3043	60 44 27	3050	59 15 16	3054	57 46 10	3060
	Saturn E.	66 51 13	3061	65 22 15	3066	63 53 24	3071	62 24 39	3076
	Mars E.	93 58 49	3267	92 33 59	3273	91 9 16	3278	89 44 39	3282
11	α Arietis W.	62 11 10	3240	63 36 32	3237	65 1 57	3237	66 27 22	3236
	Aldebaran W.	30 12 4	3092	31 40 23	3092	33 8 42	3093	34 37 0	3093
	Regulus E.	50 22 13	3082	48 53 41	3085	47 25 13	3088	45 56 49	3092
	Saturn E.	55 2 16	3096	53 34 2	3099	52 5 51	3102	50 37 44	3105
	Mars E.	82 42 52	3303	81 18 44	3306	79 54 40	3309	78 30 39	3311
12	α Arietis W.	73 34 59	3226	75 0 37	3223	76 26 19	3221	77 52 3	3219
	Aldebaran W.	41 58 27	3093	43 26 45	3091	44 55 5	3090	46 23 27	3088
	Regulus E.	38 35 40	3102	37 7 33	3104	35 39 29	3105	34 11 26	3106
	Saturn E.	43 17 46	3112	41 49 51	3112	40 21 56	3113	38 54 2	3112
	Mars E.	71 31 3	3317	70 7 11	3317	68 43 19	3316	67 19 26	3315
	Venus E.	97 45 27	3569	96 26 19	3568	95 7 10	3567	93 48 0	3567
	Sun E.	121 7 1	3477	119 46 11	3475	118 25 19	3475	117 4 27	3472
13	α Arietis W.	85 1 36	3201	86 27 44	3198	87 53 56	3193	89 20 14	3188
	Aldebaran W.	53 45 57	3073	55 14 39	3069	56 43 26	3065	58 12 19	3060
	Regulus E.	26 51 30	3113	25 23 36	3114	23 55 43	3117	22 27 54	3119
	Saturn E.	31 34 19	3108	30 6 19	3105	28 38 16	3103	27 10 10	3102
	Mars E.	60 19 34	3304	58 55 27	3300	57 31 15	3295	56 6 58	3291
	Venus E.	87 11 41	3553	85 52 15	3548	84 32 44	3544	83 13 8	3539
	Sun E.	110 19 28	3458	108 58 17	3454	107 37 2	3449	106 15 41	3444
14	α Arietis W.	96 33 18	3159	98 0 16	3153	99 27 22	3146	100 54 36	3139
	Aldebaran W.	65 38 26	3027	67 8 5	3020	68 37 53	3012	70 7 51	3003
	Mars E.	49 4 5	3262	47 39 9	3254	46 14 4	3247	44 48 50	3239
	Venus E.	76 33 30	3504	75 13 10	3496	73 52 41	3487	72 32 2	3478
	Sun E.	99 27 13	3409	98 5 7	3401	96 42 52	3392	95 20 26	3383
15	Aldebaran W.	77 40 35	2954	79 11 46	2942	80 43 12	2930	82 14 53	2918
	Pollux W.	33 41 10	2999	35 11 24	2984	36 41 57	2969	38 12 48	2954
	Mars E.	37 40 10	3193	36 13 53	3183	34 47 24	3173	33 20 43	3163
	Venus E.	65 45 59	3423	64 24 9	3410	63 2 4	3398	61 39 45	3385
	Sun E.	88 25 26	3329	87 1 48	3316	85 37 55	3303	84 13 47	3290
16	Aldebaran W.	89 57 19	2851	91 30 41	2836	93 4 22	2821	94 38 22	2807
	Pollux W.	45 51 55	2876	47 24 45	2860	48 57 55	2844	50 31 26	2828
	Mars E.	26 4 9	3112	24 36 14	3103	23 8 8	3096	21 39 53	3090
	Venus E.	54 44 10	3311	53 20 12	3295	51 55 55	3279	50 31 19	3263
	Sun E.	77 9 7	3217	75 43 18	3202	74 17 11	3185	72 50 44	3169
17	Aldebaran W.	102 33 26	2726	104 9 31	2710	105 45 58	2692	107 22 49	2675
	Pollux W.	58 24 28	2742	60 0 12	2724	61 36 20	2706	63 12 52	2689

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
17	Venus E.	° 6 24	3245	° 41 8	3229	° 15 33	3212	° 49 38	3193
	SUN E.	71 23 58	3153	69 56 52	3135	68 29 25	3117	67 1 36	3100
18	Pollux W.	64 49 47	2670	66 27 7	2652	68 4 52	2634	69 43 1	2615
	Regulus W.	28 56 43	2688	30 33 39	2667	32 11 3	2646	33 48 55	2626
	Saturn W.	23 51 19	2701	25 27 57	2680	27 5 3	2658	28 42 39	2637
	Venus E.	37 34 37	3102	36 6 30	3083	34 38 0	3065	33 9 8	3047
	SUN E.	59 37 4	3008	58 7 1	2989	56 36 34	2969	55 5 43	2950
19	Pollux W.	78 0 6	2522	79 40 48	2504	81 21 56	2486	83 3 29	2468
	Regulus W.	42 5 12	2525	43 45 50	2506	45 26 55	2487	47 8 27	2468
	Saturn W.	36 57 38	2537	38 38 0	2517	40 18 50	2498	42 0 6	2478
	SUN E.	47 25 21	2853	45 52 2	2835	44 18 19	2815	42 44 11	2796
20	Pollux W.	91 37 37	2378	93 21 43	2362	95 6 13	2345	96 51 7	2328
	Regulus W.	55 42 44	2375	57 26 54	2357	59 11 30	2341	60 56 30	2324
	Saturn W.	50 33 9	2385	52 17 5	2368	54 1 25	2350	55 46 11	2333
	SUN E.	34 47 23	2705	33 10 50	2689	31 33 55	2672	29 56 37	2656
24	SUN W.	19 49 12	2394	21 32 55	2389	23 16 46	2385	25 0 42	2383
	Fomalhaut E.	71 50 2	2258	70 3 1	2264	68 16 8	2270	66 29 25	2279
	α Pegasi E.	89 23 22	2464	87 41 18	2462	85 59 12	2465	84 17 10	2470
25	SUN W.	33 40 22	2393	35 24 7	2397	37 7 46	2403	38 51 16	2409
	Fomalhaut E.	57 39 32	2342	55 54 33	2359	54 10 0	2380	52 25 56	2401
	α Pegasi E.	75 49 21	2516	74 8 30	2530	72 27 59	2545	70 47 49	2563
26	SUN W.	47 26 18	2450	49 8 42	2460	50 50 52	2470	52 32 48	2480
	Fomalhaut E.	43 54 28	2550	42 14 24	2590	40 35 15	2635	38 57 7	2684
	α Pegasi E.	62 33 46	2678	60 56 36	2707	59 20 6	2739	57 44 18	2773
	α Arietis E.	104 18 32	2277	102 31 59	2285	100 45 37	2293	98 59 27	2302
27	SUN W.	60 58 32	2540	62 38 50	2552	64 18 51	2565	65 58 34	2579
	Jupiter W.	26 27 43	2283	28 14 8	2294	30 0 16	2307	31 46 5	2320
	α Pegasi E.	49 57 53	2996	48 27 35	3053	46 58 28	3115	45 30 37	3183
	α Arietis E.	90 12 12	2355	88 27 33	2368	86 43 12	2380	84 59 9	2394
28	SUN W.	74 12 28	2647	75 50 19	2662	77 27 50	2676	79 5 2	2691
	Jupiter W.	40 30 29	2386	42 14 24	2399	43 58 0	2412	45 41 17	2426
	α Aquilæ W.	38 32 38	4873	39 31 15	4695	40 32 19	4538	41 35 38	4399
	α Arietis E.	76 23 54	2467	74 41 55	2482	73 0 17	2499	71 19 2	2515
	Aldebaran E.	107 4 15	2327	105 18 55	2340	103 33 54	2353	101 49 12	2367
29	SUN W.	87 6 13	2763	88 41 30	2777	90 16 28	2791	91 51 8	2805
	Jupiter W.	54 12 49	2494	55 54 10	2508	57 35 12	2522	59 15 54	2535
	α Aquilæ W.	47 19 12	3921	48 32 10	3856	49 46 15	3799	51 1 18	3747
	α Arietis E.	62 58 44	2604	61 19 55	2624	59 41 32	2643	58 3 36	2664
	Aldebaran E.	93 10 32	2433	91 27 45	2447	89 45 17	2460	88 3 8	2473
30	SUN W.	99 39 52	2874	101 12 44	2888	102 45 18	2901	104 17 35	2915
	Jupiter W.	67 34 54	2601	69 13 48	2613	70 52 25	2626	72 30 45	2639
	α Aquilæ W.	57 28 8	3569	58 47 16	3545	60 6 50	3525	61 26 47	3506
	α Arietis E.	50 1 6	2777	48 26 8	2802	46 51 43	2830	45 17 54	2858
	Aldebaran E.	79 36 56	2538	77 56 36	2551	76 16 33	2563	74 36 47	2576

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.		Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
			° ' "		° ' "		° ' "		° ' "	
17	Venus	E.	43 23 21	3175	41 56 42	3158	40 29 43	3139	39 2 21	3121
	SUN	E.	65 33 27	3082	64 4 55	3064	62 36 1	3045	61 6 44	3026
18	Pollux	W.	71 21 35	2596	73 0 35	2578	74 40 0	2560	76 19 50	2541
	Regulus	W.	35 27 15	2605	37 6 3	2585	38 45 19	2565	40 25 2	2545
	Saturn	W.	30 20 43	2617	31 59 15	2596	33 38 15	2576	35 17 43	2556
	Venus	E.	31 39 54	3028	30 10 16	3009	28 40 15	2993	27 9 53	2976
	SUN	E.	53 34 27	2931	52 2 47	2912	50 30 43	2892	48 58 14	2873
19	Pollux	W.	84 45 27	2449	86 27 52	2431	88 10 42	2414	89 53 57	2396
	Regulus	W.	48 50 25	2449	50 32 50	2430	52 15 42	2412	53 59 0	2394
	Saturn	W.	43 41 50	2460	45 24 0	2441	47 6 37	2422	48 49 40	2404
	SUN	E.	41 9 38	2777	39 34 40	2760	37 59 19	2741	36 23 33	2722
20	Pollux	W.	98 36 26	2313	100 22 7	2296	102 8 12	2281	103 54 39	2266
	Regulus	W.	62 41 55	2307	64 27 45	2291	66 13 58	2274	68 0 35	2258
	Saturn	W.	57 31 22	2317	59 16 57	2300	61 2 56	2285	62 49 18	2269
	SUN	E.	28 18 58	2641	26 40 59	2627	25 2 41	2614	23 24 5	2601
24	SUN	W.	26 44 41	2384	28 28 39	2384	30 12 37	2386	31 56 32	2389
	Fomalhaut	E.	64 42 54	2288	62 56 37	2299	61 10 36	2312	59 24 54	2326
	α Pegasi	E.	82 35 15	2476	80 53 28	2484	79 11 52	2493	77 30 29	2504
25	SUN	W.	40 34 38	2416	42 17 50	2424	44 0 51	2432	45 43 41	2441
	Fomalhaut	E.	50 42 22	2425	48 59 23	2452	47 17 2	2481	45 35 22	2514
	α Pegasi	E.	69 8 3	2582	67 28 43	2603	65 49 52	2626	64 11 32	2651
26	SUN	W.	54 14 29	2492	55 55 54	2503	57 37 4	2515	59 17 56	2527
	Fomalhaut	E.	37 20 6	2741	35 44 21	2805	34 9 59	2876	32 37 10	2960
	α Pegasi	E.	56 9 15	2811	54 35 2	2852	53 1 41	2896	51 29 17	2943
	α Arietis	E.	97 13 31	2311	95 27 48	2322	93 42 20	2332	91 57 7	2344
27	SUN	W.	67 37 58	2592	69 17 4	2606	70 55 51	2620	72 34 19	2634
	Jupiter	W.	33 31 36	2333	35 16 48	2346	37 1 40	2359	38 46 14	2372
	α Pegasi	E.	44 4 8	2359	42 39 8	2340	41 15 43	2322	39 54 3	2334
	α Arietis	E.	83 15 26	2408	81 32 2	2422	79 48 59	2436	78 6 16	2451
28	SUN	W.	80 41 54	2704	82 18 28	2719	83 54 42	2734	85 30 37	2748
	Jupiter	W.	47 24 14	2440	49 6 52	2454	50 49 10	2467	52 31 9	2481
	α Aquilæ	W.	42 41 0	2479	43 48 12	2472	44 57 5	2478	46 7 28	2496
	α Arietis	E.	69 38 10	2533	67 57 42	2550	66 17 38	2567	64 37 58	2586
	Aldebaran	E.	100 4 50	2380	98 20 46	2394	96 37 2	2407	94 53 37	2421
29	SUN	W.	93 25 29	2819	94 59 32	2833	96 33 17	2847	98 6 44	2861
	Jupiter	W.	60 56 19	2548	62 36 25	2561	64 16 13	2575	65 55 42	2588
	α Aquilæ	W.	52 17 15	2703	53 33 59	2663	54 51 26	2628	56 9 30	2597
	α Arietis	E.	56 26 8	2685	54 49 8	2707	53 12 37	2729	51 36 36	2753
	Aldebaran	E.	86 21 17	2486	84 39 44	2499	82 58 30	2512	81 17 34	2525
30	SUN	W.	105 49 35	2928	107 21 18	2940	108 52 46	2954	110 23 57	2966
	Jupiter	W.	74 8 47	2651	75 46 33	2663	77 24 3	2675	79 1 16	2687
	α Aquilæ	W.	62 47 4	2491	64 7 38	2477	65 28 28	2466	66 49 30	2457
	α Arietis	E.	43 44 41	2889	42 12 8	2920	40 40 15	2955	39 9 6	2993
	Aldebaran	E.	72 57 19	2588	71 18 7	2599	69 39 11	2612	68 0 32	2624

AT APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subd. from added to Apparent Time.	Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
		^h ^m ^s	^s	[°] ['] ["]	["]	^m ^s	^m ^s	^s
Sun.	1	16 31 27.00	10.811	S. 21 53 36.6	22.82	1 10.32	10 39.19	0.952
Mon.	2	16 35 46.77	10.836	22 2 31.7	21.76	1 10.41	10 16.04	0.977
Tues.	3	16 40 7.13	10.860	22 11 1.2	20.69	1 10.49	9 52.30	1.001
Wed.	4	16 44 28.07	10.884	22 19 4.9	19.61	1 10.57	9 27.98	1.025
Thur.	5	16 48 49.57	10.907	22 26 42.5	18.52	1 10.65	9 3.11	1.048
Frid.	6	16 53 11.60	10.929	22 33 53.9	17.42	1 10.72	8 37.70	1.069
Sat.	7	16 57 34.14	10.949	22 40 38.8	16.32	1 10.78	8 11.79	1.090
Sun.	8	17 1 57.17	10.969	22 46 57.0	15.20	1 10.84	7 45.40	1.109
Mon.	9	17 6 20.66	10.988	22 52 48.3	14.08	1 10.90	7 18.54	1.128
Tues.	10	17 10 44.58	11.005	22 58 12.6	12.94	1 10.96	6 51.25	1.145
Wed.	11	17 15 8.91	11.021	23 3 9.6	11.80	1 11.01	6 23.56	1.162
Thur.	12	17 19 33.61	11.036	23 7 39.2	10.66	1 11.06	5 55.49	1.177
Frid.	13	17 23 58.66	11.051	23 11 41.2	9.51	1 11.10	5 27.07	1.191
Sat.	14	17 28 24.04	11.063	23 15 15.6	8.35	1 11.14	4 58.33	1.203
Sun.	15	17 32 49.70	11.075	23 18 22.1	7.19	1 11.17	4 29.31	1.215
Mon.	16	17 37 15.62	11.085	23 21 0.7	6.02	1 11.20	4 0.03	1.225
Tues.	17	17 41 41.77	11.094	23 23 11.2	4.85	1 11.23	3 30.52	1.234
Wed.	18	17 46 8.11	11.101	23 24 53.6	3.68	1 11.25	3 0.81	1.241
Thur.	19	17 50 34.61	11.107	23 26 7.8	2.50	1 11.27	2 30.95	1.247
Frid.	20	17 55 1.24	11.111	23 26 53.7	1.32	1 11.28	2 0.97	1.251
Sat.	21	17 59 27.94	11.114	23 27 11.4	0.15	1 11.29	1 30.90	1.254
Sun.	22	18 3 54.69	11.115	23 27 0.8	1.03	1 11.29	1 0.79	1.255
Mon.	23	18 8 21.44	11.114	23 26 21.8	2.21	1 11.28	0 30.68	1.254
Tues.	24	18 12 48.15	11.111	23 25 14.6	3.39	1 11.27	0 0.62	1.251
Wed.	25	18 17 14.77	11.107	23 23 39.0	4.57	1 11.26	0 29.37	1.247
Thur.	26	18 21 41.27	11.101	23 21 35.2	5.75	1 11.25	0 59.23	1.241
Frid.	27	18 26 7.61	11.094	23 19 3.1	6.92	1 11.23	1 28.93	1.233
Sat.	28	18 30 33.76	11.085	23 16 2.9	8.09	1 11.20	1 58.43	1.225
Sun.	29	18 34 59.68	11.074	23 12 34.7	9.26	1 11.17	2 27.71	1.215
Mon.	30	18 39 25.33	11.063	23 8 38.5	10.42	1 11.14	2 56.73	1.203
Tues.	31	18 43 50.70	11.050	23 4 14.5	11.58	1 11.10	3 25.46	1.191
Wed.	32	18 48 15.75	11.036	S. 22 59 22.8	12.73	1 11.05	3 53.88	1.177

* Mean Time of the Semidiameter passing may be found by subtracting 0^m 19 from the Sidereal Time.

AT MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S			Equation of Time, to be added to subt. from Mean Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
Sun.	1	^h 16 ^m 31 ^s 28.92	[°] S. 21 ['] 53 ["] 40.6	['] 16 ["] 15.9	^m 10 ^s 39.02	^h 16 ^m 42 ^s 7.94
Mon.	2	16 35 48.62	22 2 35.4	16 16.0	10 15.87	16 46 4.49
Tues.	3	16 40 8.92	22 11 4.6	16 16.2	9 52.13	16 50 1.05
Wed.	4	16 44 29.79	22 19 8.0	16 16.3	9 27.82	16 53 57.61
Thur.	5	16 48 51.22	22 26 45.3	16 16.4	9 2.95	16 57 54.17
Frid.	6	16 53 13.17	22 33 56.4	16 16.6	8 37.55	17 1 50.72
Sat.	7	16 57 35.64	22 40 41.0	16 16.7	8 11.64	17 5 47.28
Sun.	8	17 1 58.59	22 46 59.0	16 16.8	7 45.25	17 9 43.84
Mon.	9	17 6 21.99	22 52 50.0	16 16.9	7 18.40	17 13 40.40
Tues.	10	17 10 45.83	22 58 14.1	16 17.0	6 51.12	17 17 36.95
Wed.	11	17 15 10.08	23 3 10.9	16 17.1	6 23.43	17 21 33.51
Thur.	12	17 19 34.70	23 7 40.2	16 17.2	5 55.37	17 25 30.07
Frid.	13	17 23 59.67	23 11 42.1	16 17.3	5 26.96	17 29 26.63
Sat.	14	17 28 24.96	23 15 16.3	16 17.4	4 58.23	17 33 23.19
Sun.	15	17 32 50.53	23 18 22.6	16 17.5	4 29.22	17 37 19.75
Mon.	16	17 37 16.36	23 21 1.1	16 17.6	3 59.94	17 41 16.30
Tues.	17	17 41 42.42	23 23 11.5	16 17.6	3 30.44	17 45 12.86
Wed.	18	17 46 8.67	23 24 53.8	16 17.7	3 0.75	17 49 9.42
Thur.	19	17 50 35.08	23 26 7.9	16 17.8	2 30.90	17 53 5.98
Frid.	20	17 55 1.61	23 26 53.8	16 17.8	2 0.93	17 57 2.54
Sat.	21	17 59 28.22	23 27 11.4	16 17.9	1 30.87	18 0 59.09
Sun.	22	18 3 54.88	23 27 0.7	16 17.9	1 0.77	18 4 55.65
Mon.	23	18 8 21.54	23 26 21.8	16 18.0	0 30.67	18 8 52.21
Tues.	24	18 12 48.15	23 25 14.6	16 18.0	0 0.62	18 12 48.77
Wed.	25	18 17 14.68	23 23 39.1	16 18.1	0 29.36	18 16 45.33
Thur.	26	18 21 41.09	23 21 35.3	16 18.1	0 59.21	18 20 41.88
Frid.	27	18 26 7.34	23 19 3.3	16 18.1	1 28.90	18 24 38.44
Sat.	28	18 30 33.39	23 16 3.2	16 18.2	1 58.39	18 28 35.00
Sun.	29	18 34 59.22	23 12 35.1	16 18.2	2 27.66	18 32 31.56
Mon.	30	18 39 24.79	23 8 39.0	16 18.2	2 56.67	18 36 28.12
Tues.	31	18 43 50.07	23 4 15.1	16 18.2	3 25.39	18 40 24.67
Wed.	32	18 48 15.03	S. 22 59 23.6	16 18.2	3 53.80	18 44 21.23

* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

MEAN TIME.

Day of the Month.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	249 32 29.0	S. 0° 61'	9.9937035	7 16 40.33	15 34.4	15 29.2	57 3.3	56 44.4
2	250 33 21.1	0° 60'	.9936354	7 12 44.42	15 24.4	15 19.8	56 26.6	56 9.8
3	251 34 14.0	0° 56'	.9935696	7 8 48.51	15 15.5	15 11.4	55 54.0	55 39.2
4	252 35 7.8	0° 49'	9.9935062	7 4 52.60	15 7.7	15 4.1	55 25.4	55 12.5
5	253 36 2.4	0° 40'	.9934453	7 0 56.69	15 0.9	14 57.9	55 0.6	54 49.7
6	254 36 58.0	0° 30'	.9933869	6 57 0.77	14 55.2	14 52.7	54 39.7	54 30.7
7	255 37 54.6	0° 19'	9.9933311	6 53 4.86	14 50.6	14 48.6	54 22.7	54 15.7
8	256 38 52.0	S. 0° 07'	.9932778	6 49 8.95	14 47.1	14 45.8	54 9.9	54 5.3
9	257 39 50.4	N. 0° 05'	.9932271	6 45 13.04	14 44.9	14 44.4	54 2.0	54 0.2
10	258 40 49.8	0° 16'	9.9931790	6 41 17.13	14 44.4	14 44.7	54 0.0	54 1.4
11	259 41 50.1	0° 27'	.9931334	6 37 21.21	14 45.6	14 47.1	54 4.7	54 9.9
12	260 42 51.3	0° 37'	.9930904	6 33 25.30	14 49.1	14 51.6	54 17.2	54 26.7
13	261 43 53.5	0° 45'	9.9930498	6 29 29.39	14 54.9	14 58.7	54 38.5	54 52.6
14	262 44 56.6	0° 51'	.9930115	6 25 33.48	15 3.2	15 8.3	55 9.0	55 27.8
15	263 46 0.6	0° 55'	.9929755	6 21 37.56	15 14.1	15 20.4	55 48.8	56 12.0
16	264 47 5.5	0° 57'	9.9929417	6 17 41.65	15 27.2	15 34.5	56 37.1	57 3.9
17	265 48 11.3	0° 55'	.9929100	6 13 45.74	15 42.2	15 50.1	57 32.0	58 0.9
18	266 49 18.0	0° 50'	.9928802	6 9 49.83	15 58.1	16 6.1	58 30.3	58 59.5
19	267 50 25.5	0° 42'	9.9928523	6 5 53.92	16 13.8	16 21.1	59 27.7	59 54.3
20	268 51 33.8	0° 32'	.9928261	6 1 58.00	16 27.7	16 33.4	60 18.5	60 39.7
21	269 52 42.7	0° 20'	.9928014	5 58 2.09	16 38.2	16 41.7	60 57.1	61 10.1
22	270 53 52.2	N. 0° 06'	9.9927782	5 54 6.18	16 44.0	16 44.9	61 18.3	61 21.5
23	271 55 2.0	S. 0° 08'	.9927566	5 50 10.27	16 44.4	16 42.5	61 19.7	61 12.8
24	272 56 12.1	0° 22'	.9927366	5 46 14.36	16 39.3	16 35.1	61 1.3	60 45.6
25	273 57 22.3	0° 34'	9.9927182	5 42 18.44	16 29.8	16 23.7	60 26.3	60 4.1
26	274 58 32.4	0° 43'	.9927015	5 38 22.53	16 17.0	16 9.9	59 39.6	59 13.6
27	275 59 42.5	0° 48'	.9926867	5 34 26.62	16 2.6	15 55.2	58 46.7	58 19.6
28	277 0 52.5	0° 50'	9.9926739	5 30 30.71	15 47.9	15 40.7	57 52.8	57 26.6
29	278 2 2.3	0° 50'	.9926633	5 26 34.79	15 33.9	15 27.4	57 1.5	56 37.7
30	279 3 11.9	0° 47'	.9926550	5 22 38.88	15 21.3	15 15.7	56 15.5	55 54.9
31	280 4 21.3	0° 41'	.9926491	5 18 42.97	15 10.6	15 5.9	55 36.1	55 19.1
32	281 5 30.6	S. 0° 33'	9.9926457	5 14 47.06	15 1.8	14 58.1	55 3.9	54 50.5

MEAN TIME.

THE MOON'S

Day of the Month.

	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.		Upper.	Lower.
	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]	^d	^h ^m	^h ^m
1	1 33 27.3	8 6 49.2	S. 5 14 44.7	S. 5 13 45.8	8.4	7 46.2	20 8.7
2	14 36 14.6	21 1 55.5	5 8 45.2	4 59 53.9	9.4	8 30.9	20 53.1
3	27 24 4.4	33 42 52.8	4 47 23.8	4 31 29.6	10.4	9 15.2	21 37.4
4	39 58 32.7	46 11 14.6	4 12 26.8	3 50 32.8	11.4	9 59.8	22 22.5
5	52 21 9.4	58 28 27.6	3 26 5.8	2 59 25.2	12.4	10 45.5	23 8.8
6	64 33 20.0	70 35 57.8	2 30 51.1	2 0 44.2	13.4	11 32.5	23 56.5
7	76 36 32.7	82 35 17.1	1 29 24.9	S. 0 57 14.7	14.4	12 20.9	* *
8	88 32 25.2	94 28 12.0	S. 0 24 34.0	N. 0 8 16.5	15.4	13 10.1	0 45.4
9	100 22 54.5	106 16 51.2	N. 0 40 56.8	1 13 7.4	16.4	13 59.6	1 34.9
10	112 10 22.7	118 3 51.3	1 44 29.6	2 14 45.4	17.4	14 48.5	2 24.1
11	123 57 41.6	129 52 20.3	2 43 37.2	3 10 48.2	18.4	15 36.2	3 12.5
12	135 48 15.5	141 45 57.6	3 36 2.1	3 59 3.4	19.4	16 22.6	3 59.6
13	147 45 58.3	153 48 50.5	4 19 36.7	4 37 27.1	20.4	17 7.6	4 45.2
14	159 55 8.2	166 5 25.2	4 52 19.8	5 4 0.6	21.4	17 51.9	5 29.8
15	172 20 15.0	178 40 10.3	5 12 15.6	5 16 51.4	22.4	18 36.1	6 13.9
16	185 5 41.3	191 37 15.5	5 17 35.2	5 14 16.0	23.4	19 21.2	6 58.5
17	198 15 15.7	204 59 59.6	5 6 44.3	4 54 52.9	24.4	20 8.5	7 44.5
18	211 51 37.5	218 50 12.3	4 38 39.0	4 18 2.9	25.4	20 58.9	8 33.2
19	225 55 37.1	233 7 34.8	3 53 10.9	3 24 15.6	26.4	21 53.7	9 25.7
20	240 25 37.5	247 49 6.7	2 51 37.3	2 15 42.4	27.4	22 53.1	10 22.8
21	255 17 13.2	262 48 59.0	1 37 5.8	N. 0 56 28.7	28.4	23 56.6	11 24.5
22	270 23 18.3	277 59 0.6	N. 0 14 37.6	S. 0 27 36.9	29.4	* *	12 29.2
23	285 34 52.9	293 9 41.9	S. 1 9 22.8	1 49 49.1	1.0	1 2.0	13 34.5
24	300 42 18.5	308 11 38.2	2 28 7.8	3 3 35.9	2.0	2 6.5	14 37.5
25	315 36 45.1	322 56 52.0	3 35 37.2	4 3 42.6	3.0	3 7.4	15 36.2
26	330 11 22.1	337 19 49.2	4 27 30.9	4 46 48.8	4.0	4 3.8	16 30.2
27	344 21 56.9	351 17 38.4	5 1 28.1	5 11 29.1	5.0	4 55.6	17 20.1
28	358 6 55.5	4 49 57.0	5 16 55.4	5 17 55.1	6.0	5 43.8	18 6.9
29	11 26 57.3	17 58 15.7	5 14 39.2	5 7 21.3	7.0	6 29.6	18 52.0
30	24 24 15.0	30 45 20.0	4 56 16.6	4 41 41.4	8.0	7 14.2	19 36.3
31	37 1 57.1	43 14 32.9	4 23 52.9	4 3 8.9	9.0	7 58.5	20 20.8
32	49 23 34.4	55 29 28.3	S. 3 39 47.8	S. 3 14 8.0	10.0	8 43.5	21 6.4

The Moon's Longitude and Latitude are from HANSEN'S Tables *direct*; the Right Ascension and Declination contain NEWCOMB'S corrections.

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 1.					TUESDAY 3.				
0	h m s		° ' "		0	h m s		° ' "	
0	0 14 3 ⁵⁷	20 ¹³⁷	S. 4 11 38 ⁵	130 ⁰⁷	0	1 48 38 ¹⁴	19 ⁵¹⁶	N. 6 4 43 ⁰	123 ³⁶
1	0 16 4 ³¹	20 ¹⁰⁸	3 58 37 ⁹	130 ¹⁴	1	1 50 35 ²⁴	19 ⁵¹⁸	6 17 2 ¹	123 ⁰¹
2	0 18 4 ⁸⁷	20 ⁰⁸⁰	3 45 36 ⁸	130 ²¹	2	1 52 32 ³⁵	19 ⁵²¹	6 29 19 ¹	122 ⁶⁶
3	0 20 5 ²⁷	20 ⁰⁵³	3 32 35 ⁴	130 ²⁶	3	1 54 29 ⁴⁹	19 ⁵²⁴	6 41 34 ⁰	122 ²⁹
4	0 22 5 ⁵¹	20 ⁰²⁸	3 19 33 ⁷	130 ³¹	4	1 56 26 ⁶⁴	19 ⁵²⁷	6 53 46 ⁶	121 ⁹²
5	0 24 5 ⁶⁰	20 ⁰⁰²	3 6 31 ⁷	130 ³⁵	5	1 58 23 ⁸¹	19 ⁵³¹	7 5 57 ⁰	121 ⁵⁴
6	0 26 5 ⁵³	19 ⁹⁷⁶	2 53 29 ⁵	130 ³⁷	6	2 02 1 ⁰¹	19 ⁵³⁶	7 18 5 ¹	121 ¹⁵
7	0 28 5 ³¹	19 ⁹⁵²	2 40 27 ²	130 ³⁸	7	2 2 18 ²⁴	19 ⁵⁴¹	7 30 10 ⁸	120 ⁷⁵
8	0 30 4 ⁹⁵	19 ⁹²⁸	2 27 24 ⁹	130 ³⁹	8	2 4 15 ⁵⁰	19 ⁵⁴⁷	7 42 14 ¹	120 ³⁴
9	0 32 4 ⁴⁵	19 ⁹⁰⁶	2 14 22 ⁵	130 ³⁹	9	2 6 12 ⁸⁰	19 ⁵⁵³	7 54 14 ⁹	119 ⁹³
10	0 34 3 ⁸²	19 ⁸⁸³	2 1 20 ²	130 ³⁸	10	2 8 10 ¹⁴	19 ⁵⁶⁰	8 6 13 ³	119 ⁵²
11	0 36 3 ⁰⁵	19 ⁸⁶²	1 48 17 ⁹	130 ³⁷	11	2 10 7 ⁵²	19 ⁵⁶⁷	8 18 9 ²	119 ⁰⁹
12	0 38 2 ¹⁶	19 ⁸⁴²	1 35 15 ⁸	130 ³³	12	2 12 4 ⁹⁴	19 ⁵⁷⁴	8 30 2 ⁴	118 ⁶⁵
13	0 40 1 ¹⁵	19 ⁸²¹	1 22 13 ⁹	130 ²⁹	13	2 14 2 ⁴¹	19 ⁵⁸³	8 41 53 ⁰	118 ²¹
14	0 42 0 ⁰¹	19 ⁸⁰¹	1 9 12 ³	130 ²⁴	14	2 15 59 ⁹³	19 ⁵⁹¹	8 53 40 ⁹	117 ⁷⁶
15	0 43 58 ⁷	19 ⁷⁸³	0 56 11 ⁰	130 ¹⁸	15	2 17 57 ⁵⁰	19 ⁶⁰⁰	9 5 26 ¹	117 ³⁰
16	0 45 57 ⁴⁰	19 ⁷⁶⁴	0 43 10 ¹	130 ¹²	16	2 19 55 ¹³	19 ⁶¹⁰	9 17 8 ⁵	116 ⁸³
17	0 47 55 ⁹³	19 ⁷⁴⁶	0 30 9 ⁶	130 ⁰⁴	17	2 21 52 ⁸²	19 ⁶²⁰	9 28 48 ¹	116 ³⁶
18	0 49 54 ³⁵	19 ⁷²⁹	0 17 9 ⁶	129 ⁹⁵	18	2 23 50 ⁵⁷	19 ⁶³¹	9 40 24 ⁸	115 ⁸⁸
19	0 51 52 ⁶⁸	19 ⁷¹³	S. 0 4 10 ²	129 ⁸⁶	19	2 25 48 ³⁹	19 ⁶⁴²	9 51 58 ⁶	115 ³⁸
20	0 53 50 ⁹¹	19 ⁶⁹⁸	N. 0 8 48 ⁷	129 ⁷⁶	20	2 27 46 ²⁷	19 ⁶⁵³	10 3 29 ⁴	114 ⁸⁸
21	0 55 49 ⁰⁵	19 ⁶⁸³	0 21 46 ⁹	129 ⁶⁴	21	2 29 44 ²²	19 ⁶⁶⁴	10 14 57 ²	114 ³⁸
22	0 57 47 ¹⁰	19 ⁶⁶⁸	0 34 44 ⁴	129 ⁵²	22	2 31 42 ²⁴	19 ⁶⁷⁷	10 26 22 ⁰	113 ⁸⁷
23	0 59 45 ⁰⁷	19 ⁶⁵⁴	N. 0 47 41 ²	129 ³⁹	23	2 33 40 ³⁴	19 ⁶⁸⁹	N. 10 37 43 ⁶	113 ³⁴
MONDAY 2.					WEDNESDAY 4.				
0	1 142 ⁹⁵	19 ⁶⁴¹	N. 1 0 37 ¹	129 ²⁵	0	2 35 38 ⁵¹	19 ⁷⁰²	N. 10 49 2 ¹	112 ⁸²
1	1 340 ⁷⁶	19 ⁶²⁹	1 13 32 ²	129 ¹⁰	1	2 37 36 ⁷⁶	19 ⁷¹⁵	11 0 17 ⁴	112 ²⁸
2	1 538 ⁵⁰	19 ⁶¹⁸	1 26 26 ³	128 ⁹⁴	2	2 39 35 ⁰⁹	19 ⁷²⁹	11 11 29 ⁴	111 ⁷³
3	1 736 ¹⁷	19 ⁶⁰⁷	1 39 19 ⁵	128 ⁷⁸	3	2 41 33 ⁵¹	19 ⁷⁴³	11 22 38 ²	111 ¹⁸
4	1 933 ⁷⁸	19 ⁵⁹⁷	1 52 11 ⁶	128 ⁶⁰	4	2 43 32 ⁰¹	19 ⁷⁵⁷	11 33 43 ⁶	110 ⁶³
5	1 1131 ³³	19 ⁵⁸⁷	2 5 2 ⁷	128 ⁴²	5	2 45 30 ⁵⁹	19 ⁷⁷²	11 44 45 ⁷	110 ⁰⁶
6	1 1328 ⁸²	19 ⁵⁷⁸	2 17 52 ⁷	128 ²³	6	2 47 29 ²⁷	19 ⁷⁸⁸	11 55 44 ³	109 ⁴⁸
7	1 1526 ²⁶	19 ⁵⁶⁸	2 30 41 ⁵	128 ⁰³	7	2 49 28 ⁰⁴	19 ⁸⁰³	12 6 39 ⁴	108 ⁹⁰
8	1 1723 ⁶⁴	19 ⁵⁶¹	2 43 29 ¹	127 ⁸³	8	2 51 26 ⁹⁰	19 ⁸¹⁸	12 17 31 ¹	108 ³¹
9	1 1920 ⁹⁹	19 ⁵⁵⁴	2 56 15 ⁴	127 ⁶⁰	9	2 53 25 ⁸⁶	19 ⁸³⁵	12 28 19 ¹	107 ⁷¹
10	1 2118 ²⁹	19 ⁵⁴⁷	3 9 0 ³	127 ³⁸	10	2 55 24 ⁹²	19 ⁸⁵²	12 39 3 ⁶	107 ¹¹
11	1 2315 ⁵⁵	19 ⁵⁴¹	3 21 43 ⁹	127 ¹⁵	11	2 57 24 ⁰⁸	19 ⁸⁶⁸	12 49 44 ⁴	106 ⁴⁸
12	1 2512 ⁷⁸	19 ⁵³⁶	3 34 26 ¹	126 ⁹¹	12	2 59 23 ³³	19 ⁸⁸⁴	13 0 21 ⁴	105 ⁸⁶
13	1 27 9 ⁹⁸	19 ⁵³¹	3 47 6 ⁸	126 ⁶⁶	13	3 1 22 ⁶⁹	19 ⁹⁰³	13 10 54 ⁷	105 ²⁴
14	1 29 7 ¹⁵	19 ⁵²⁷	3 59 46 ⁰	126 ⁴⁰	14	3 3 22 ¹⁶	19 ⁹²¹	13 21 24 ³	104 ⁶²
15	1 31 4 ⁴⁰	19 ⁵²³	4 12 23 ⁶	126 ¹³	15	3 5 21 ⁷⁴	19 ⁹³⁹	13 31 50 ¹	103 ⁹⁷
16	1 33 1 ⁴³	19 ⁵²⁰	4 24 59 ⁵	125 ⁸⁵	16	3 7 21 ⁴³	19 ⁹⁵⁷	13 42 11 ⁹	103 ³¹
17	1 34 58 ⁵⁴	19 ⁵¹⁸	4 37 33 ⁸	125 ⁵⁸	17	3 9 21 ²²	19 ⁹⁷⁵	13 52 29 ⁸	102 ⁶⁶
18	1 36 55 ⁶⁴	19 ⁵¹⁶	4 50 6 ⁴	125 ²⁸	18	3 11 21 ¹³	19 ⁹⁹⁵	14 2 43 ⁸	102 ⁰⁰
19	1 38 52 ⁷³	19 ⁵¹⁴	5 2 37 ²	124 ⁹⁸	19	3 13 21 ¹⁶	20 ⁰¹⁴	14 12 53 ⁸	101 ³³
20	1 40 49 ⁸¹	19 ⁵¹³	5 15 6 ²	124 ⁶⁸	20	3 15 21 ³⁰	20 ⁰³³	14 22 59 ⁷	100 ⁶⁴
21	1 42 46 ⁸⁹	19 ⁵¹³	5 27 33 ³	124 ³⁶	21	3 17 21 ⁵⁵	20 ⁰⁵²	14 33 1 ⁵	99 ⁹⁵
22	1 44 43 ⁹⁷	19 ⁵¹³	5 39 58 ⁵	124 ⁰⁴	22	3 19 21 ⁹²	20 ⁰⁷³	14 42 59 ¹	99 ²⁵
23	1 46 41 ⁰⁵	19 ⁵¹⁴	5 52 21 ⁸	123 ⁷¹	23	3 21 22 ⁴²	20 ⁰⁹³	14 52 52 ⁵	98 ⁵⁵
24	1 48 38 ¹⁴	19 ⁵¹⁶	N. 6 4 43 ⁰	123 ³⁶	24	3 23 23 ⁰³	20 ¹¹³	N. 15 2 41 ⁷	97 ⁸⁴

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
THURSDAY 5.					SATURDAY 7.				
0	3 23 23.03	20.113	N.15 241.7	97.84	0	5 2 25.83	21.143	N.21 1743.7	56.02
1	3 25 23.77	20.133	15 12 26.6	97.13	1	5 4 32.75	21.162	21 23 16.8	55.01
2	3 27 24.63	20.153	15 22 7.2	96.41	2	5 6 39.77	21.180	21 28 43.8	53.99
3	3 29 25.61	20.174	15 31 43.5	95.68	3	5 8 46.91	21.198	21 34 4.7	52.97
4	3 31 26.72	20.196	15 41 15.3	94.93	4	5 10 54.15	21.215	21 39 19.4	51.94
5	3 33 27.96	20.218	15 50 42.7	94.19	5	5 13 1.49	21.233	21 44 28.0	50.91
6	3 35 29.33	20.238	16 0 5.6	93.44	6	5 15 8.94	21.250	21 49 30.3	49.88
7	3 37 30.82	20.260	16 9 24.0	92.68	7	5 17 16.49	21.267	21 54 26.5	48.84
8	3 39 32.45	20.282	16 18 37.8	91.92	8	5 19 24.14	21.283	21 59 16.4	47.79
9	3 41 34.20	20.303	16 27 47.0	91.14	9	5 21 31.89	21.299	22 4 0.0	46.75
10	3 43 36.09	20.325	16 36 51.5	90.36	10	5 23 39.73	21.314	22 8 37.4	45.70
11	3 45 38.10	20.347	16 45 51.3	89.58	11	5 25 47.66	21.329	22 13 8.4	44.63
12	3 47 40.25	20.369	16 54 46.4	88.78	12	5 27 55.68	21.345	22 17 33.0	43.58
13	3 49 42.53	20.391	17 3 36.7	87.98	13	5 30 3.80	21.360	22 21 51.3	42.53
14	3 51 44.94	20.413	17 12 22.2	87.18	14	5 32 12.00	21.373	22 26 3.3	41.46
15	3 53 47.49	20.436	17 21 2.8	86.36	15	5 34 20.28	21.388	22 30 8.8	40.38
16	3 55 50.17	20.458	17 29 38.5	85.53	16	5 36 28.65	21.401	22 34 7.9	39.32
17	3 57 52.99	20.481	17 38 9.2	84.71	17	5 38 37.09	21.413	22 38 0.6	38.24
18	3 59 55.94	20.503	17 46 35.0	83.88	18	5 40 45.61	21.427	22 41 46.8	37.17
19	4 1 59.02	20.525	17 54 55.7	83.03	19	5 42 54.21	21.438	22 45 26.6	36.08
20	4 4 2.24	20.548	18 3 11.4	82.19	20	5 45 2.87	21.450	22 48 59.8	34.99
21	4 6 5.60	20.571	18 11 22.0	81.33	21	5 47 11.61	21.462	22 52 26.5	33.91
22	4 8 9.09	20.593	18 19 27.4	80.48	22	5 49 20.41	21.473	22 55 46.7	32.82
23	4 10 12.72	20.616	N.18 27 27.7	79.61	23	5 51 29.28	21.483	N.22 59 0.3	31.72
FRIDAY 6.					SUNDAY 8.				
0	4 12 16.48	20.638	N.18 35 22.7	78.73	0	5 53 38.20	21.492	N.23 2 7.3	30.63
1	4 14 20.38	20.661	18 43 12.5	77.86	1	5 55 47.18	21.502	23 5 7.8	29.53
2	4 16 24.41	20.683	18 50 57.0	76.97	2	5 57 56.22	21.512	23 8 1.6	28.43
3	4 18 28.57	20.705	18 58 36.1	76.08	3	6 0 5.32	21.520	23 10 48.9	27.33
4	4 20 32.87	20.728	19 6 9.9	75.18	4	6 2 14.46	21.528	23 13 29.5	26.22
5	4 22 37.30	20.749	19 13 38.3	74.28	5	6 4 23.65	21.535	23 16 3.5	25.12
6	4 24 41.86	20.772	19 21 1.2	73.36	6	6 6 32.88	21.542	23 18 30.9	24.01
7	4 26 46.56	20.794	19 28 18.6	72.45	7	6 8 42.15	21.548	23 20 51.6	22.89
8	4 28 51.39	20.816	19 35 30.6	71.53	8	6 10 51.46	21.555	23 23 5.6	21.78
9	4 30 56.35	20.838	19 42 37.0	70.60	9	6 13 0.81	21.562	23 25 13.0	20.68
10	4 33 1.44	20.859	19 49 37.8	69.66	10	6 15 10.20	21.567	23 27 13.7	19.55
11	4 35 6.66	20.881	19 56 32.9	68.72	11	6 17 19.61	21.571	23 29 7.6	18.43
12	4 37 12.01	20.903	20 3 22.4	67.78	12	6 19 29.05	21.575	23 30 54.9	17.33
13	4 39 17.49	20.923	20 10 6.2	66.83	13	6 21 38.51	21.579	23 32 35.5	16.21
14	4 41 23.09	20.944	20 16 44.3	65.88	14	6 23 48.00	21.583	23 34 9.4	15.08
15	4 43 28.82	20.965	20 23 16.7	64.92	15	6 25 57.50	21.584	23 35 36.5	13.97
16	4 45 34.67	20.986	20 29 43.3	63.95	16	6 28 7.01	21.587	23 36 57.0	12.85
17	4 47 40.65	21.007	20 36 4.1	62.98	17	6 30 16.54	21.588	23 38 10.7	11.73
18	4 49 46.75	21.027	20 42 19.0	61.99	18	6 32 26.07	21.589	23 39 17.7	10.60
19	4 51 52.97	21.047	20 48 28.0	61.01	19	6 34 35.61	21.591	23 40 17.9	9.48
20	4 53 59.31	21.067	20 54 31.1	60.02	20	6 36 45.16	21.591	23 41 11.4	8.36
21	4 56 5.77	21.086	21 0 28.2	59.03	21	6 38 54.70	21.590	23 41 58.2	7.24
22	4 58 12.34	21.105	21 6 19.4	58.03	22	6 41 4.24	21.589	23 42 38.3	6.12
23	5 0 19.03	21.124	21 12 4.6	57.03	23	6 43 13.77	21.588	23 43 11.6	4.98
24	5 2 25.83	21.143	N.21 1743.7	56.02	24	6 45 23.29	21.586	N.23 43 38.1	3.86

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
MONDAY 9.					WEDNESDAY 11.				
0	h m s 6 45 23.29	21.586	N.23 43 38.1	3.86	0	h m s 8 27 53.58	20.973	N.21 55 29.7	47.93
1	6 47 32.80	21.583	23 43 57.9	2.74	1	8 29 59.35	20.951	21 50 39.1	48.94
2	6 49 42.29	21.580	23 44 11.0	1.62	2	8 32 4.99	20.929	21 45 42.4	49.94
3	6 51 51.76	21.577	23 44 17.3	0.50	3	8 34 10.50	20.908	21 40 39.8	50.93
4	6 54 1.21	21.573	23 44 17.0	0.62	4	8 36 15.88	20.886	21 35 31.3	51.91
5	6 56 10.64	21.569	23 44 9.9	1.75	5	8 38 21.13	20.864	21 30 16.9	52.89
6	6 58 20.04	21.564	23 43 56.0	2.87	6	8 40 26.25	20.843	21 24 56.6	53.87
7	7 0 29.41	21.558	23 43 35.5	3.98	7	8 42 31.24	20.821	21 19 30.5	54.84
8	7 2 38.74	21.553	23 43 8.2	5.10	8	8 44 36.10	20.798	21 13 58.5	55.81
9	7 4 48.04	21.547	23 42 34.3	6.22	9	8 46 40.82	20.776	21 8 20.8	56.77
10	7 6 57.30	21.539	23 41 53.6	7.34	10	8 48 45.41	20.753	21 2 37.3	57.73
11	7 9 6.51	21.532	23 41 6.2	8.45	11	8 50 49.86	20.731	20 56 48.0	58.69
12	7 11 15.68	21.524	23 40 12.2	9.56	12	8 52 54.18	20.709	20 50 53.0	59.64
13	7 13 24.80	21.516	23 39 11.5	10.68	13	8 54 58.37	20.687	20 44 52.3	60.58
14	7 15 33.87	21.507	23 38 4.1	11.79	14	8 57 2.42	20.663	20 38 46.0	61.52
15	7 17 42.88	21.498	23 36 50.0	12.90	15	8 59 6.33	20.640	20 32 34.1	62.45
16	7 19 51.84	21.488	23 35 29.3	14.00	16	9 1 10.10	20.618	20 26 16.6	63.38
17	7 22 0.74	21.478	23 34 2.0	15.11	17	9 3 13.74	20.595	20 19 53.5	64.31
18	7 24 9.57	21.468	23 32 28.0	16.22	18	9 5 17.24	20.572	20 13 24.9	65.23
19	7 26 18.35	21.457	23 30 47.4	17.31	19	9 7 20.60	20.548	20 6 50.8	66.13
20	7 28 27.05	21.444	23 29 0.3	18.41	20	9 9 23.82	20.526	20 0 11.3	67.04
21	7 30 35.68	21.433	23 27 6.5	19.51	21	9 11 26.91	20.503	19 53 26.3	67.95
22	7 32 44.24	21.420	23 25 6.2	20.60	22	9 13 29.86	20.480	19 46 35.9	68.85
23	7 34 52.72	21.407	N.23 22 59.3	21.69	23	9 15 32.67	20.457	N.19 39 40.1	69.75
TUESDAY 10.					THURSDAY 12.				
0	7 37 1.12	21.393	N.23 20 45.9	22.78	0	9 17 35.34	20.434	N.19 32 38.9	70.63
1	7 39 9.44	21.380	23 18 26.0	23.86	1	9 19 37.88	20.412	19 25 32.5	71.51
2	7 41 17.68	21.367	23 15 59.6	24.95	2	9 21 40.28	20.388	19 18 20.8	72.39
3	7 43 25.84	21.352	23 13 26.6	26.03	3	9 23 42.54	20.366	19 11 3.8	73.26
4	7 45 33.90	21.337	23 10 47.2	27.10	4	9 25 44.67	20.343	19 3 41.7	74.13
5	7 47 41.88	21.322	23 8 1.4	28.18	5	9 27 46.66	20.321	18 56 14.3	74.99
6	7 49 49.76	21.306	23 5 9.1	29.25	6	9 29 48.52	20.299	18 48 41.8	75.84
7	7 51 57.55	21.290	23 2 10.4	30.32	7	9 31 50.25	20.277	18 41 4.2	76.69
8	7 54 5.24	21.274	22 59 5.3	31.38	8	9 33 51.84	20.253	18 33 21.5	77.53
9	7 56 12.84	21.258	22 55 53.8	32.45	9	9 35 53.29	20.232	18 25 33.8	78.38
10	7 58 20.33	21.240	22 52 35.9	33.51	10	9 37 54.62	20.211	18 17 41.0	79.22
11	8 0 27.72	21.223	22 49 11.7	34.57	11	9 39 55.82	20.188	18 9 43.2	80.04
12	8 2 35.00	21.205	22 45 41.1	35.62	12	9 41 56.88	20.167	18 1 40.5	80.87
13	8 4 42.18	21.187	22 42 4.3	36.66	13	9 43 57.82	20.146	17 53 32.8	81.68
14	8 6 49.24	21.168	22 38 21.2	37.71	14	9 45 58.63	20.124	17 45 20.3	82.49
15	8 8 56.20	21.151	22 34 31.8	38.75	15	9 47 59.31	20.103	17 37 2.9	83.31
16	8 11 3.05	21.132	22 30 36.2	39.78	16	9 49 59.87	20.083	17 28 40.6	84.11
17	8 13 9.78	21.113	22 26 34.4	40.82	17	9 52 0.30	20.062	17 20 13.6	84.90
18	8 15 16.40	21.093	22 22 26.4	41.85	18	9 54 0.61	20.041	17 11 41.8	85.69
19	8 17 22.89	21.073	22 18 12.2	42.88	19	9 56 0.79	20.021	17 3 5.3	86.48
20	8 19 29.27	21.053	22 13 51.9	43.89	20	9 58 0.86	20.002	16 54 24.1	87.25
21	8 21 35.53	21.033	22 9 25.5	44.92	21	10 0 0.81	19.981	16 45 38.3	88.03
22	8 23 41.67	21.013	22 4 52.9	45.93	22	10 2 0.63	19.961	16 36 47.8	88.79
23	8 25 47.69	20.993	22 0 14.3	46.93	23	10 4 0.34	19.943	16 27 52.8	89.55
24	8 27 53.58	20.973	N.21 55 29.7	47.93	24	10 5 59.94	19.923	N.16 18 53.2	90.31

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^s .	Declination.	Var. in 10 ^s .	Hour.	Right Ascension.	Var. in 10 ^s .	Declination.	Var. in 10 ^s .
FRIDAY 13.					SUNDAY 15.				
0	10 55 9.4	19.923	N. 16 18 53.2	90.31	0	11 40 7.75	19.473	N. 7 49 18.9	119.72
1	10 7 59.42	19.904	16 9 49.1	91.06	1	11 42 4.59	19.475	7 37 19.2	120.18
2	10 9 58.79	19.886	16 0 40.5	91.80	2	11 44 1.45	19.479	7 25 16.7	120.64
3	10 11 58.05	19.868	15 51 27.5	92.54	3	11 45 58.34	19.483	7 13 11.5	121.09
4	10 13 57.20	19.849	15 42 10.0	93.28	4	11 47 55.25	19.488	7 1 3.6	121.53
5	10 15 56.24	19.832	15 32 48.2	94.00	5	11 49 52.19	19.493	6 48 53.1	121.97
6	10 17 55.18	19.815	15 23 22.0	94.73	6	11 51 49.17	19.500	6 36 40.0	122.40
7	10 19 54.02	19.798	15 13 51.5	95.44	7	11 53 46.19	19.507	6 24 24.3	122.83
8	10 21 52.75	19.781	15 4 16.7	96.15	8	11 55 43.25	19.513	6 12 6.1	123.23
9	10 23 51.39	19.765	14 54 37.7	96.85	9	11 57 40.35	19.521	5 59 45.5	123.64
10	10 25 49.93	19.749	14 44 54.5	97.55	10	11 59 37.50	19.530	5 47 22.4	124.05
11	10 27 48.38	19.733	14 35 7.1	98.25	11	12 1 34.71	19.540	5 34 56.9	124.44
12	10 29 46.73	19.718	14 25 15.5	98.94	12	12 3 31.98	19.550	5 22 29.1	124.83
13	10 31 44.99	19.703	14 15 19.8	99.62	13	12 5 29.31	19.560	5 9 59.0	125.21
14	10 33 43.17	19.689	14 5 20.1	100.29	14	12 7 26.70	19.571	4 57 26.6	125.58
15	10 35 41.26	19.675	13 55 16.3	100.97	15	12 9 24.16	19.583	4 44 52.0	125.95
16	10 37 39.27	19.661	13 45 8.5	101.63	16	12 11 21.69	19.595	4 32 15.2	126.31
17	10 39 37.19	19.648	13 34 56.8	102.28	17	12 13 19.30	19.608	4 19 36.3	126.66
18	10 41 35.04	19.635	13 24 41.1	102.94	18	12 15 16.99	19.623	4 6 55.3	127.01
19	10 43 32.81	19.623	13 14 21.5	103.58	19	12 17 14.77	19.638	3 54 12.2	127.34
20	10 45 30.51	19.611	13 3 58.1	104.23	20	12 19 12.64	19.653	3 41 27.2	127.67
21	10 47 28.14	19.599	12 53 30.8	104.86	21	12 21 10.60	19.669	3 28 40.2	127.99
22	10 49 25.70	19.588	12 42 59.8	105.48	22	12 23 8.67	19.686	3 15 51.3	128.30
23	10 51 23.20	19.578	N. 12 32 25.0	106.12	23	12 25 6.83	19.703	N. 3 3 0.6	128.61
SATURDAY 14.					MONDAY 16.				
0	10 53 20.63	19.567	N. 12 21 46.4	106.73	0	12 27 5.10	19.721	N. 2 50 8.0	128.91
1	10 55 18.00	19.558	12 11 4.2	107.34	1	12 29 3.48	19.739	2 37 13.7	129.20
2	10 57 15.32	19.548	12 0 18.3	107.95	2	12 31 1.97	19.758	2 24 17.6	129.48
3	10 59 12.58	19.539	11 49 28.8	108.55	3	12 33 0.58	19.779	2 11 19.9	129.75
4	11 1 9.79	19.531	11 38 35.7	109.14	4	12 34 59.32	19.800	1 58 20.6	130.02
5	11 3 6.95	19.523	11 27 39.1	109.73	5	12 36 58.18	19.822	1 45 19.7	130.28
6	11 5 4.06	19.515	11 16 39.0	110.31	6	12 38 57.18	19.844	1 32 17.2	130.53
7	11 7 1.13	19.508	11 5 35.4	110.89	7	12 40 56.31	19.867	1 19 13.3	130.77
8	11 8 58.16	19.502	10 54 28.3	111.46	8	12 42 55.58	19.891	1 6 8.0	131.00
9	11 10 55.15	19.495	10 43 17.9	112.02	9	12 44 55.00	19.916	0 53 1.3	131.23
10	11 12 52.10	19.490	10 32 4.1	112.58	10	12 46 54.57	19.941	0 39 53.3	131.44
11	11 14 49.03	19.486	10 20 47.0	113.13	11	12 48 54.29	19.967	0 26 44.0	131.63
12	11 16 45.93	19.482	10 9 26.6	113.67	12	12 50 54.17	19.993	0 13 33.6	131.83
13	11 18 42.81	19.478	9 58 3.0	114.21	13	12 52 54.21	20.021	N. 0 0 22.0	132.03
14	11 20 39.66	19.473	9 46 36.1	114.74	14	12 54 54.42	20.048	S. 0 12 50.8	132.22
15	11 22 36.49	19.471	9 35 6.1	115.27	15	12 56 54.79	20.078	0 26 4.6	132.38
16	11 24 33.31	19.469	9 23 32.9	115.79	16	12 58 55.35	20.108	0 39 19.4	132.54
17	11 26 30.12	19.468	9 11 56.6	116.31	17	13 0 56.08	20.138	0 52 35.1	132.69
18	11 28 26.92	19.467	9 0 17.2	116.82	18	13 2 57.00	20.168	1 5 51.7	132.83
19	11 30 23.72	19.466	8 48 34.8	117.32	19	13 4 58.10	20.200	1 19 9.1	132.97
20	11 32 20.51	19.466	8 36 49.4	117.81	20	13 6 59.40	20.233	1 32 27.3	133.09
21	11 34 17.31	19.467	8 25 1.1	118.29	21	13 9 0.90	20.268	1 45 46.2	133.21
22	11 36 14.11	19.468	8 13 9.9	118.78	22	13 11 2.61	20.302	1 59 5.8	133.32
23	11 38 10.92	19.470	8 1 15.8	119.25	23	13 13 4.52	20.336	2 12 26.0	133.40
24	11 40 7.75	19.473	N. 7 49 18.9	119.72	24	13 15 6.64	20.372	S. 2 25 46.6	133.48

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 17.					THURSDAY 19.				
0	13 15 6.64	20.373	S. 2 25 46.6	133.48	0	14 58 24.87	22.939	S. 12 53 23.8	122.77
1	13 17 8.98	20.408	2 39 7.7	133.56	1	15 0 42.71	23.008	13 5 38.7	122.18
2	13 19 11.54	20.445	2 52 29.3	133.63	2	15 3 0.96	23.078	13 17 49.9	121.57
3	13 21 14.32	20.483	3 5 51.2	133.67	3	15 5 19.64	23.148	13 29 57.5	120.94
4	13 23 17.33	20.522	3 19 13.3	133.71	4	15 7 38.73	23.218	13 42 1.2	120.30
5	13 25 20.58	20.562	3 32 35.7	133.74	5	15 9 58.25	23.289	13 54 1.1	119.64
6	13 27 24.07	20.602	3 45 58.2	133.76	6	15 12 18.20	23.360	14 5 56.9	118.96
7	13 29 27.80	20.643	3 59 20.8	133.77	7	15 14 38.57	23.431	14 17 48.6	118.27
8	13 31 31.78	20.684	4 12 43.4	133.76	8	15 16 59.37	23.503	14 29 36.1	117.56
9	13 33 36.01	20.727	4 26 5.9	133.74	9	15 19 20.60	23.575	14 41 19.3	116.83
10	13 35 40.50	20.770	4 39 28.3	133.72	10	15 21 42.27	23.648	14 52 58.0	116.07
11	13 37 45.25	20.814	4 52 50.5	133.68	11	15 24 4.37	23.720	15 4 32.1	115.29
12	13 39 50.27	20.859	5 6 12.5	133.63	12	15 26 26.91	23.793	15 16 1.5	114.51
13	13 41 55.56	20.904	5 19 34.1	133.57	13	15 28 40.89	23.867	15 27 26.2	113.70
14	13 44 1.12	20.950	5 32 55.3	133.49	14	15 31 13.31	23.940	15 38 45.9	112.88
15	13 46 6.96	20.998	5 46 16.0	133.41	15	15 33 37.17	24.013	15 50 0.7	112.03
16	13 48 13.09	21.046	5 59 36.2	133.32	16	15 36 1.47	24.088	16 1 10.3	111.17
17	13 50 19.51	21.094	6 12 55.8	133.20	17	15 38 26.22	24.162	16 12 14.7	110.29
18	13 52 26.22	21.143	6 26 14.6	133.07	18	15 40 51.41	24.236	16 23 13.8	109.39
19	13 54 33.23	21.193	6 39 32.7	132.94	19	15 43 17.05	24.310	16 34 7.4	108.47
20	13 56 40.54	21.243	6 52 49.9	132.79	20	15 45 43.13	24.384	16 44 55.4	107.53
21	13 58 48.15	21.295	7 6 6.2	132.63	21	15 48 9.66	24.458	16 55 37.7	106.57
22	14 0 56.08	21.348	7 19 21.4	132.45	22	15 50 36.63	24.533	17 6 14.2	105.59
23	14 3 4.32	21.400	S. 7 32 35.6	132.27	23	15 53 4.05	24.608	S. 17 16 44.8	104.60
WEDNESDAY 18.					FRIDAY 20.				
0	14 5 12.88	21.454	S. 7 45 48.6	132.07	0	15 55 31.92	24.682	S. 17 27 9.4	103.58
1	14 7 21.77	21.508	7 59 0.4	131.85	1	15 58 0.23	24.756	17 37 27.8	102.55
2	14 9 30.98	21.563	8 12 10.8	131.62	2	16 0 28.99	24.831	17 47 40.0	101.50
3	14 11 40.53	21.619	8 25 19.8	131.38	3	16 2 58.20	24.905	17 57 45.8	100.43
4	14 13 50.41	21.676	8 38 27.4	131.12	4	16 5 27.85	24.978	18 7 45.1	99.33
5	14 16 0.64	21.733	8 51 33.3	130.84	5	16 7 57.94	25.052	18 17 37.8	98.22
6	14 18 11.21	21.791	9 4 37.5	130.56	6	16 10 28.47	25.125	18 27 23.8	97.09
7	14 20 22.13	21.849	9 17 40.0	130.27	7	16 12 59.44	25.198	18 37 2.9	95.94
8	14 22 33.40	21.908	9 30 40.7	129.95	8	16 15 30.84	25.270	18 46 35.1	94.77
9	14 24 45.03	21.968	9 43 39.4	129.61	9	16 18 2.68	25.343	18 56 0.2	93.58
10	14 26 57.02	22.029	9 56 36.0	129.27	10	16 20 34.96	25.416	19 5 18.1	92.38
11	14 29 9.38	22.090	10 9 30.6	128.91	11	16 23 7.67	25.487	19 14 28.7	91.15
12	14 31 22.10	22.152	10 22 22.9	128.53	12	16 25 40.80	25.558	19 23 31.9	89.91
13	14 33 35.20	22.214	10 35 12.9	128.14	13	16 28 14.36	25.629	19 32 27.6	88.64
14	14 35 48.67	22.277	10 48 0.6	127.73	14	16 30 48.35	25.700	19 41 15.6	87.36
15	14 38 2.52	22.341	11 0 45.7	127.31	15	16 33 22.76	25.769	19 49 55.9	86.06
16	14 40 16.76	22.405	11 13 28.3	126.87	16	16 35 57.58	25.839	19 58 28.3	84.73
17	14 42 31.38	22.469	11 26 8.1	126.41	17	16 38 32.82	25.907	20 6 52.7	83.40
18	14 44 46.39	22.535	11 38 45.2	125.94	18	16 41 8.46	25.974	20 15 9.1	82.04
19	14 47 1.80	22.602	11 51 19.4	125.46	19	16 43 44.51	26.042	20 23 17.2	80.67
20	14 49 17.61	22.668	12 3 50.7	124.95	20	16 46 20.96	26.108	20 31 17.1	79.28
21	14 51 33.81	22.734	12 16 18.8	124.43	21	16 48 57.80	26.173	20 39 8.6	77.87
22	14 53 50.42	22.802	12 28 43.8	123.89	22	16 51 35.04	26.239	20 46 51.6	76.44
23	14 56 7.44	22.871	12 41 5.5	123.33	23	16 54 12.67	26.303	20 54 25.9	74.99
24	14 58 24.87	22.939	S. 12 53 23.8	122.77	24	16 56 50.67	26.366	S. 21 1 51.5	73.53

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SATURDAY 21.					MONDAY 23.				
0	16 56 50 ^s 67 ^s	26 ^s 366	S. 21 1 51 ^s 5 ^s	73 ^s 53	0	19 8 11 ^s 42 ^s	27 ^s 735	S. 23 41 29 ^s 5 ^s	10 ^s 17
1	16 59 29 ^s 06 ^s	26 ^s 428	21 9 8 ^s 3 ^s	72 ^s 06	1	19 10 57 ^s 79 ^s	27 ^s 720	23 40 23 ^s 0 ^s	12 ^s 01
2	17 2 7 ^s 81 ^s	26 ^s 489	21 16 16 ^s 2 ^s	70 ^s 56	2	19 13 44 ^s 06 ^s	27 ^s 703	23 39 5 ^s 4 ^s	13 ^s 85
3	17 4 46 ^s 93 ^s	26 ^s 549	21 23 15 ^s 0 ^s	69 ^s 04	3	19 16 30 ^s 23 ^s	27 ^s 685	23 37 36 ^s 8 ^s	15 ^s 69
4	17 7 26 ^s 40 ^s	26 ^s 608	21 30 4 ^s 7 ^s	67 ^s 52	4	19 19 16 ^s 28 ^s	27 ^s 665	23 35 57 ^s 1 ^s	17 ^s 53
5	17 10 6 ^s 23 ^s	26 ^s 667	21 36 45 ^s 2 ^s	65 ^s 98	5	19 22 2 ^s 21 ^s	27 ^s 643	23 34 6 ^s 5 ^s	19 ^s 36
6	17 12 46 ^s 41 ^s	26 ^s 724	21 43 16 ^s 5 ^s	64 ^s 42	6	19 24 48 ^s 00 ^s	27 ^s 619	23 32 4 ^s 8 ^s	21 ^s 18
7	17 15 26 ^s 92 ^s	26 ^s 780	21 49 38 ^s 3 ^s	62 ^s 84	7	19 27 33 ^s 64 ^s	27 ^s 594	23 29 52 ^s 3 ^s	22 ^s 99
8	17 18 7 ^s 77 ^s	26 ^s 835	21 55 50 ^s 6 ^s	61 ^s 25	8	19 30 19 ^s 13 ^s	27 ^s 567	23 27 28 ^s 9 ^s	24 ^s 80
9	17 20 48 ^s 94 ^s	26 ^s 888	22 1 53 ^s 3 ^s	59 ^s 65	9	19 33 4 ^s 44 ^s	27 ^s 538	23 24 54 ^s 7 ^s	26 ^s 61
10	17 23 30 ^s 43 ^s	26 ^s 940	22 7 46 ^s 4 ^s	58 ^s 03	10	19 35 49 ^s 58 ^s	27 ^s 508	23 22 9 ^s 6 ^s	28 ^s 41
11	17 26 12 ^s 22 ^s	26 ^s 991	22 13 29 ^s 7 ^s	56 ^s 41	11	19 38 34 ^s 53 ^s	27 ^s 475	23 19 13 ^s 8 ^s	30 ^s 19
12	17 28 54 ^s 32 ^s	27 ^s 041	22 19 3 ^s 3 ^s	54 ^s 77	12	19 41 19 ^s 28 ^s	27 ^s 441	23 16 7 ^s 3 ^s	31 ^s 97
13	17 31 36 ^s 71 ^s	27 ^s 089	22 24 26 ^s 9 ^s	53 ^s 09	13	19 44 3 ^s 82 ^s	27 ^s 405	23 12 50 ^s 2 ^s	33 ^s 73
14	17 34 19 ^s 39 ^s	27 ^s 137	22 29 40 ^s 4 ^s	51 ^s 42	14	19 46 48 ^s 14 ^s	27 ^s 368	23 9 22 ^s 5 ^s	35 ^s 50
15	17 37 2 ^s 35 ^s	27 ^s 183	22 34 43 ^s 9 ^s	49 ^s 73	15	19 49 32 ^s 24 ^s	27 ^s 330	23 5 44 ^s 2 ^s	37 ^s 25
16	17 39 45 ^s 58 ^s	27 ^s 227	22 39 37 ^s 2 ^s	48 ^s 04	16	19 52 16 ^s 10 ^s	27 ^s 289	23 1 55 ^s 5 ^s	38 ^s 98
17	17 42 29 ^s 07 ^s	27 ^s 268	22 44 20 ^s 4 ^s	46 ^s 33	17	19 54 59 ^s 71 ^s	27 ^s 247	22 57 56 ^s 4 ^s	40 ^s 71
18	17 45 12 ^s 80 ^s	27 ^s 309	22 48 53 ^s 2 ^s	44 ^s 60	18	19 57 43 ^s 07 ^s	27 ^s 204	22 53 47 ^s 0 ^s	42 ^s 43
19	17 47 56 ^s 78 ^s	27 ^s 349	22 53 15 ^s 6 ^s	42 ^s 88	19	20 0 26 ^s 16 ^s	27 ^s 159	22 49 27 ^s 2 ^s	44 ^s 14
20	17 50 40 ^s 99 ^s	27 ^s 388	22 57 27 ^s 7 ^s	41 ^s 13	20	20 3 8 ^s 98 ^s	27 ^s 113	22 44 57 ^s 3 ^s	45 ^s 83
21	17 53 25 ^s 43 ^s	27 ^s 424	23 1 29 ^s 2 ^s	39 ^s 38	21	20 5 51 ^s 51 ^s	27 ^s 065	22 40 17 ^s 3 ^s	47 ^s 51
22	17 56 10 ^s 08 ^s	27 ^s 458	23 5 20 ^s 2 ^s	37 ^s 62	22	20 8 33 ^s 76 ^s	27 ^s 017	22 35 27 ^s 2 ^s	49 ^s 18
23	17 58 54 ^s 93 ^s	27 ^s 492	S. 23 9 0 ^s 6 ^s	35 ^s 85	23	20 11 15 ^s 71 ^s	26 ^s 966	S. 22 30 27 ^s 1 ^s	50 ^s 84
SUNDAY 22.					TUESDAY 24.				
0	18 1 39 ^s 08 ^s	27 ^s 523	S. 23 12 30 ^s 4 ^s	34 ^s 07	0	20 13 57 ^s 35 ^s	26 ^s 914	S. 22 55 17 ^s 1 ^s	52 ^s 48
1	18 4 25 ^s 21 ^s	27 ^s 553	23 15 49 ^s 4 ^s	32 ^s 27	1	20 16 38 ^s 68 ^s	26 ^s 861	22 19 57 ^s 3 ^s	54 ^s 11
2	18 7 10 ^s 61 ^s	27 ^s 581	23 18 57 ^s 6 ^s	30 ^s 47	2	20 19 19 ^s 68 ^s	26 ^s 806	22 14 27 ^s 8 ^s	55 ^s 72
3	18 9 56 ^s 18 ^s	27 ^s 608	23 21 55 ^s 0 ^s	28 ^s 66	3	20 22 0 ^s 35 ^s	26 ^s 751	22 8 48 ^s 7 ^s	57 ^s 32
4	18 12 41 ^s 90 ^s	27 ^s 632	23 24 41 ^s 5 ^s	26 ^s 85	4	20 24 40 ^s 69 ^s	26 ^s 695	22 3 0 ^s 0 ^s	58 ^s 90
5	18 15 27 ^s 76 ^s	27 ^s 654	23 27 17 ^s 2 ^s	25 ^s 03	5	20 27 20 ^s 69 ^s	26 ^s 638	21 57 1 ^s 9 ^s	60 ^s 48
6	18 18 13 ^s 75 ^s	27 ^s 675	23 29 41 ^s 9 ^s	23 ^s 20	6	20 30 0 ^s 34 ^s	26 ^s 578	21 50 54 ^s 3 ^s	62 ^s 03
7	18 20 59 ^s 86 ^s	27 ^s 694	23 31 55 ^s 6 ^s	21 ^s 37	7	20 32 39 ^s 63 ^s	26 ^s 518	21 44 37 ^s 5 ^s	63 ^s 57
8	18 23 46 ^s 08 ^s	27 ^s 712	23 33 58 ^s 3 ^s	19 ^s 53	8	20 35 18 ^s 50 ^s	26 ^s 458	21 38 11 ^s 5 ^s	65 ^s 10
9	18 26 32 ^s 40 ^s	27 ^s 728	23 35 50 ^s 0 ^s	17 ^s 70	9	20 37 57 ^s 12 ^s	26 ^s 396	21 31 36 ^s 3 ^s	66 ^s 61
10	18 29 18 ^s 81 ^s	27 ^s 742	23 37 30 ^s 7 ^s	15 ^s 85	10	20 40 35 ^s 31 ^s	26 ^s 333	21 24 52 ^s 2 ^s	68 ^s 10
11	18 32 5 ^s 30 ^s	27 ^s 753	23 39 0 ^s 2 ^s	13 ^s 99	11	20 43 13 ^s 12 ^s	26 ^s 270	21 17 59 ^s 1 ^s	69 ^s 59
12	18 34 51 ^s 85 ^s	27 ^s 763	23 40 18 ^s 6 ^s	12 ^s 14	12	20 45 50 ^s 55 ^s	26 ^s 206	21 10 57 ^s 1 ^s	71 ^s 05
13	18 37 38 ^s 46 ^s	27 ^s 771	23 41 25 ^s 9 ^s	10 ^s 28	13	20 48 27 ^s 59 ^s	26 ^s 140	21 3 46 ^s 5 ^s	72 ^s 48
14	18 40 25 ^s 10 ^s	27 ^s 777	23 42 22 ^s 0 ^s	8 ^s 43	14	20 51 4 ^s 23 ^s	26 ^s 073	20 56 27 ^s 3 ^s	73 ^s 91
15	18 43 11 ^s 78 ^s	27 ^s 782	23 43 7 ^s 0 ^s	6 ^s 57	15	20 53 40 ^s 47 ^s	26 ^s 007	20 48 59 ^s 6 ^s	75 ^s 32
16	18 45 58 ^s 48 ^s	27 ^s 783	23 43 40 ^s 8 ^s	4 ^s 71	16	20 56 16 ^s 31 ^s	25 ^s 939	20 41 23 ^s 5 ^s	76 ^s 72
17	18 48 45 ^s 18 ^s	27 ^s 784	23 44 3 ^s 5 ^s	2 ^s 84	17	20 58 51 ^s 74 ^s	25 ^s 871	20 33 39 ^s 0 ^s	78 ^s 09
18	18 51 31 ^s 89 ^s	27 ^s 783	23 44 14 ^s 9 ^s	0 ^s 98	18	21 1 26 ^s 76 ^s	25 ^s 803	20 25 46 ^s 4 ^s	79 ^s 44
19	18 54 18 ^s 58 ^s	27 ^s 779	23 44 15 ^s 2 ^s	0 ^s 88	19	21 4 ^s 1 ^s 37 ^s	25 ^s 733	20 17 45 ^s 7 ^s	80 ^s 78
20	18 57 5 ^s 24 ^s	27 ^s 774	23 44 4 ^s 4 ^s	2 ^s 73	20	21 6 35 ^s 56 ^s	25 ^s 663	20 9 37 ^s 0 ^s	82 ^s 11
21	18 59 51 ^s 87 ^s	27 ^s 768	23 43 42 ^s 4 ^s	4 ^s 59	21	21 9 9 ^s 33 ^s	25 ^s 593	20 1 20 ^s 4 ^s	83 ^s 42
22	19 2 38 ^s 45 ^s	27 ^s 758	23 43 9 ^s 3 ^s	6 ^s 45	22	21 11 42 ^s 67 ^s	25 ^s 521	19 52 56 ^s 0 ^s	84 ^s 70
23	19 5 24 ^s 97 ^s	27 ^s 748	23 42 25 ^s 0 ^s	8 ^s 32	23	21 14 15 ^s 58 ^s	25 ^s 450	19 44 24 ^s 0 ^s	85 ^s 97
24	19 8 11 ^s 42 ^s	27 ^s 735	S. 23 41 29 ^s 5 ^s	10 ^s 17	24	21 16 48 ^s 07 ^s	25 ^s 378	S. 19 35 44 ^s 4 ^s	87 ^s 22

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .	Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
WEDNESDAY 25.					FRIDAY 27.				
0	21 16 48 ^{h m s} .07	25 ^a .378	S. 19 35 44 ^{h m s} .4	87 ⁿ .22	0	23 10 15 ^{h m s} .91	22 ^a .003	S. 10 47 27 ^{h m s} .2	126 ⁿ .22
1	21 19 20 ^{h m s} .12	25 ^a .305	19 26 57 ^{h m s} .4	88 ⁿ .45	1	23 12 27 ^{h m s} .75	21 ^a .943	10 34 48 ^{h m s} .7	126 ⁿ .63
2	21 21 51 ^{h m s} .73	25 ^a .233	19 18 3 ^{h m s} .0	89 ⁿ .67	2	23 14 39 ^{h m s} .23	21 ^a .884	10 22 7 ^{h m s} .7	127 ⁿ .02
3	21 24 22 ^{h m s} .91	25 ^a .160	19 9 1 ^{h m s} .4	90 ⁿ .86	3	23 16 50 ^{h m s} .36	21 ^a .826	10 9 24 ^{h m s} .5	127 ⁿ .39
4	21 26 53 ^{h m s} .65	25 ^a .087	18 59 52 ^{h m s} .7	92 ⁿ .04	4	23 19 1 ^{h m s} .14	21 ^a .768	9 56 39 ^{h m s} .0	127 ⁿ .76
5	21 29 23 ^{h m s} .95	25 ^a .013	18 50 36 ^{h m s} .9	93 ⁿ .20	5	23 21 11 ^{h m s} .58	21 ^a .711	9 43 51 ^{h m s} .4	128 ⁿ .10
6	21 31 53 ^{h m s} .81	24 ^a .940	18 41 14 ^{h m s} .3	94 ⁿ .34	6	23 23 21 ^{h m s} .67	21 ^a .654	9 31 1 ^{h m s} .8	128 ⁿ .44
7	21 34 23 ^{h m s} .23	24 ^a .866	18 31 44 ^{h m s} .8	95 ⁿ .47	7	23 25 31 ^{h m s} .43	21 ^a .598	9 18 10 ^{h m s} .1	128 ⁿ .77
8	21 36 52 ^{h m s} .20	24 ^a .791	18 22 8 ^{h m s} .7	96 ⁿ .57	8	23 27 40 ^{h m s} .85	21 ^a .543	9 5 16 ^{h m s} .6	129 ⁿ .07
9	21 39 20 ^{h m s} .72	24 ^a .717	18 12 26 ^{h m s} .0	97 ⁿ .65	9	23 29 49 ^{h m s} .95	21 ^a .490	8 52 21 ^{h m s} .3	129 ⁿ .37
10	21 41 48 ^{h m s} .80	24 ^a .643	18 2 36 ^{h m s} .9	98 ⁿ .72	10	23 31 58 ^{h m s} .73	21 ^a .436	8 39 24 ^{h m s} .2	129 ⁿ .65
11	21 44 16 ^{h m s} .44	24 ^a .569	17 52 41 ^{h m s} .4	99 ⁿ .77	11	23 34 7 ^{h m s} .18	21 ^a .383	8 26 25 ^{h m s} .5	129 ⁿ .93
12	21 46 43 ^{h m s} .63	24 ^a .494	17 42 39 ^{h m s} .7	100 ⁿ .79	12	23 36 15 ^{h m s} .32	21 ^a .331	8 13 25 ^{h m s} .1	130 ⁿ .18
13	21 49 10 ^{h m s} .37	24 ^a .420	17 32 31 ^{h m s} .9	101 ⁿ .81	13	23 38 23 ^{h m s} .15	21 ^a .279	8 0 23 ^{h m s} .3	130 ⁿ .42
14	21 51 36 ^{h m s} .67	24 ^a .346	17 22 18 ^{h m s} .0	102 ⁿ .81	14	23 40 30 ^{h m s} .67	21 ^a .229	7 47 20 ^{h m s} .1	130 ⁿ .64
15	21 54 2 ^{h m s} .52	24 ^a .272	17 11 58 ^{h m s} .2	103 ⁿ .78	15	23 42 37 ^{h m s} .90	21 ^a .179	7 34 15 ^{h m s} .6	130 ⁿ .86
16	21 56 27 ^{h m s} .93	24 ^a .198	17 1 32 ^{h m s} .7	104 ⁿ .73	16	23 44 44 ^{h m s} .82	21 ^a .129	7 21 9 ^{h m s} .8	131 ⁿ .07
17	21 58 52 ^{h m s} .90	24 ^a .124	16 51 1 ^{h m s} .5	105 ⁿ .68	17	23 46 51 ^{h m s} .45	21 ^a .082	7 8 2 ^{h m s} .8	131 ⁿ .26
18	22 1 17 ^{h m s} .42	24 ^a .050	16 40 24 ^{h m s} .6	106 ⁿ .60	18	23 48 57 ^{h m s} .80	21 ^a .034	6 54 54 ^{h m s} .7	131 ⁿ .43
19	22 3 41 ^{h m s} .50	23 ^a .976	16 29 42 ^{h m s} .3	107 ⁿ .49	19	23 51 3 ^{h m s} .86	20 ^a .987	6 41 45 ^{h m s} .6	131 ⁿ .60
20	22 6 5 ^{h m s} .13	23 ^a .903	16 18 54 ^{h m s} .7	108 ⁿ .38	20	23 53 9 ^{h m s} .64	20 ^a .941	6 28 35 ^{h m s} .5	131 ⁿ .76
21	22 8 28 ^{h m s} .33	23 ^a .829	16 8 1 ^{h m s} .8	109 ⁿ .25	21	23 55 15 ^{h m s} .15	20 ^a .896	6 15 24 ^{h m s} .5	131 ⁿ .90
22	22 10 51 ^{h m s} .08	23 ^a .756	15 57 3 ^{h m s} .7	110 ⁿ .10	22	23 57 20 ^{h m s} .39	20 ^a .851	6 2 12 ^{h m s} .7	132 ⁿ .03
23	22 13 13 ^{h m s} .40	23 ^a .683	S. 15 46 0 ^{h m s} .6	110 ⁿ .93	23	23 59 25 ^{h m s} .36	20 ^a .807	S. 5 49 0 ^{h m s} .2	132 ⁿ .14
THURSDAY 26.					SATURDAY 28.				
0	22 15 35 ^{h m s} .28	23 ^a .611	S. 15 34 52 ^{h m s} .6	111 ⁿ .73	0	0 1 30 ^{h m s} .07	20 ^a .764	S. 5 35 47 ^{h m s} .0	132 ⁿ .25
1	22 17 56 ^{h m s} .73	23 ^a .538	15 23 39 ^{h m s} .8	112 ⁿ .53	1	0 3 34 ^{h m s} .53	20 ^a .723	5 22 33 ^{h m s} .2	132 ⁿ .35
2	22 20 17 ^{h m s} .74	23 ^a .466	15 12 22 ^{h m s} .2	113 ⁿ .31	2	0 5 38 ^{h m s} .74	20 ^a .681	5 9 18 ^{h m s} .8	132 ⁿ .44
3	22 22 38 ^{h m s} .32	23 ^a .395	15 1 0 ^{h m s} .1	114 ⁿ .07	3	0 7 42 ^{h m s} .70	20 ^a .639	4 56 3 ^{h m s} .9	132 ⁿ .52
4	22 24 58 ^{h m s} .48	23 ^a .324	14 49 33 ^{h m s} .4	114 ⁿ .82	4	0 9 46 ^{h m s} .41	20 ^a .599	4 42 48 ^{h m s} .6	132 ⁿ .58
5	22 27 18 ^{h m s} .21	23 ^a .253	14 38 2 ^{h m s} .3	115 ⁿ .53	5	0 11 49 ^{h m s} .89	20 ^a .561	4 29 33 ^{h m s} .0	132 ⁿ .63
6	22 29 37 ^{h m s} .52	23 ^a .183	14 26 27 ^{h m s} .0	116 ⁿ .24	6	0 13 53 ^{h m s} .14	20 ^a .523	4 16 17 ^{h m s} .1	132 ⁿ .67
7	22 31 56 ^{h m s} .40	23 ^a .113	14 14 47 ^{h m s} .4	116 ⁿ .94	7	0 15 56 ^{h m s} .16	20 ^a .485	4 3 1 ^{h m s} .0	132 ⁿ .70
8	22 34 14 ^{h m s} .87	23 ^a .043	14 3 3 ^{h m s} .7	117 ⁿ .62	8	0 17 58 ^{h m s} .96	20 ^a .448	3 49 44 ^{h m s} .7	132 ⁿ .72
9	22 36 32 ^{h m s} .92	22 ^a .974	13 51 16 ^{h m s} .0	118 ⁿ .28	9	0 20 1 ^{h m s} .53	20 ^a .411	3 36 28 ^{h m s} .4	132 ⁿ .73
10	22 38 50 ^{h m s} .56	22 ^a .906	13 39 24 ^{h m s} .4	118 ⁿ .92	10	0 22 3 ^{h m s} .89	20 ^a .376	3 23 12 ^{h m s} .0	132 ⁿ .73
11	22 41 7 ^{h m s} .79	22 ^a .838	13 27 29 ^{h m s} .0	119 ⁿ .53	11	0 24 6 ^{h m s} .04	20 ^a .342	3 9 55 ^{h m s} .7	132 ⁿ .71
12	22 43 24 ^{h m s} .61	22 ^a .770	13 15 30 ^{h m s} .0	120 ⁿ .14	12	0 26 7 ^{h m s} .99	20 ^a .308	2 56 39 ^{h m s} .5	132 ⁿ .68
13	22 45 41 ^{h m s} .03	22 ^a .703	13 3 27 ^{h m s} .3	120 ⁿ .74	13	0 28 9 ^{h m s} .74	20 ^a .275	2 43 23 ^{h m s} .5	132 ⁿ .65
14	22 47 57 ^{h m s} .04	22 ^a .636	12 51 21 ^{h m s} .1	121 ⁿ .32	14	0 30 11 ^{h m s} .29	20 ^a .242	2 30 7 ^{h m s} .7	132 ⁿ .62
15	22 50 12 ^{h m s} .66	22 ^a .571	12 39 11 ^{h m s} .5	121 ⁿ .88	15	0 32 12 ^{h m s} .64	20 ^a .210	2 16 52 ^{h m s} .1	132 ⁿ .57
16	22 52 27 ^{h m s} .89	22 ^a .505	12 26 58 ^{h m s} .6	122 ⁿ .42	16	0 34 13 ^{h m s} .81	20 ^a .180	2 3 36 ^{h m s} .9	132 ⁿ .49
17	22 54 42 ^{h m s} .72	22 ^a .440	12 14 42 ^{h m s} .5	122 ⁿ .95	17	0 36 14 ^{h m s} .80	20 ^a .150	1 50 22 ^{h m s} .2	132 ⁿ .43
18	22 56 57 ^{h m s} .17	22 ^a .376	12 2 23 ^{h m s} .2	123 ⁿ .47	18	0 38 15 ^{h m s} .61	20 ^a .120	1 37 7 ^{h m s} .8	132 ⁿ .35
19	22 59 11 ^{h m s} .23	22 ^a .312	11 50 0 ^{h m s} .9	123 ⁿ .96	19	0 40 16 ^{h m s} .24	20 ^a .092	1 23 54 ^{h m s} .0	132 ⁿ .25
20	23 1 24 ^{h m s} .91	22 ^a .249	11 37 35 ^{h m s} .7	124 ⁿ .44	20	0 42 16 ^{h m s} .71	20 ^a .064	1 10 40 ^{h m s} .8	132 ⁿ .15
21	23 3 38 ^{h m s} .22	22 ^a .187	11 25 7 ^{h m s} .6	124 ⁿ .91	21	0 44 17 ^{h m s} .01	20 ^a .038	0 57 28 ^{h m s} .2	132 ⁿ .04
22	23 5 51 ^{h m s} .15	22 ^a .124	11 12 36 ^{h m s} .8	125 ⁿ .36	22	0 46 17 ^{h m s} .16	20 ^a .011	0 44 16 ^{h m s} .3	131 ⁿ .93
23	23 8 3 ^{h m s} .71	22 ^a .063	11 0 3 ^{h m s} .3	125 ⁿ .80	23	0 48 17 ^{h m s} .14	19 ^a .985	0 31 5 ^{h m s} .1	131 ⁿ .79
24	23 10 15 ^{h m s} .91	22 ^a .003	S. 10 47 27 ^{h m s} .2	126 ⁿ .22	24	0 50 16 ^{h m s} .98	19 ^a .961	S. 0 17 54 ^{h m s} .8	131 ⁿ .65

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
SUNDAY 29.				
0	h m s 0 50 16.98	19.961	S. 0 17 54.8	131.65
1	0 52 16.67	19.937	S. 0 4 45.3	131.51
2	0 54 16.22	19.913	N. 0 8 23.3	131.36
3	0 56 15.63	19.891	0 21 31.0	131.19
4	0 58 14.91	19.869	0 34 37.6	131.02
5	1 0 14.06	19.848	0 47 43.2	130.83
6	1 2 13.08	19.828	1 0 47.6	130.64
7	1 4 11.99	19.808	1 13 50.9	130.45
8	1 6 10.78	19.789	1 26 53.0	130.24
9	1 8 9.46	19.771	1 39 53.8	130.03
10	1 10 8.03	19.753	1 52 53.3	129.80
11	1 12 6.50	19.737	2 5 51.4	129.56
12	1 14 4.87	19.721	2 18 48.0	129.32
13	1 16 3.15	19.705	2 31 43.2	129.08
14	1 18 1.33	19.690	2 44 36.9	128.82
15	1 19 59.43	19.677	2 57 29.0	128.55
16	1 21 57.45	19.663	3 10 19.5	128.28
17	1 23 55.39	19.651	3 23 8.4	128.00
18	1 25 53.26	19.638	3 35 55.5	127.71
19	1 27 51.05	19.627	3 48 40.9	127.41
20	1 29 48.78	19.617	4 1 24.4	127.10
21	1 31 46.45	19.607	4 14 6.1	126.79
22	1 33 44.06	19.597	4 26 45.9	126.48
23	1 35 41.62	19.589	N. 4 39 23.8	126.14

MONDAY 30.				
0	1 37 39.13	19.582	N. 4 51 59.6	125.80
1	1 39 36.60	19.574	5 4 33.4	125.46
2	1 41 34.02	19.567	5 17 5.1	125.12
3	1 43 31.40	19.561	5 29 34.8	124.76
4	1 45 28.75	19.556	5 42 2.2	124.38
5	1 47 26.07	19.551	5 54 27.4	124.02
6	1 49 23.36	19.547	6 6 50.4	123.63
7	1 51 20.63	19.543	6 19 11.0	123.24
8	1 53 17.88	19.541	6 31 29.3	122.85
9	1 55 15.12	19.538	6 43 45.2	122.45
10	1 57 12.34	19.537	6 55 58.7	122.04
11	1 59 9.56	19.536	7 8 9.7	121.62
12	2 1 6.77	19.535	7 20 18.1	121.19
13	2 3 3.98	19.535	7 32 24.0	120.77
14	2 5 1.19	19.536	7 44 27.3	120.33
15	2 6 58.41	19.537	7 56 27.9	119.88
16	2 8 55.63	19.538	8 8 25.9	119.43
17	2 10 52.87	19.541	8 20 21.1	118.97
18	2 12 50.12	19.544	8 32 13.5	118.50
19	2 14 47.40	19.548	8 44 3.1	118.03
20	2 16 44.69	19.551	8 55 49.9	117.55
21	2 18 42.01	19.556	9 7 33.7	117.06
22	2 20 39.36	19.562	9 19 14.6	116.57
23	2 22 36.75	19.568	9 30 52.5	116.07
24	2 24 34.17	19.573	N. 9 42 27.4	115.56

Hour.	Right Ascension.	Var. in 10 ^m .	Declination.	Var. in 10 ^m .
TUESDAY 31.				
0	h m s 2 24 34.17	19.573	N. 9 42 27.4	115.56
1	2 26 31.63	19.580	9 53 59.2	115.04
2	2 28 29.13	19.587	10 5 27.9	114.52
3	2 30 26.67	19.594	10 16 53.4	113.98
4	2 32 24.26	19.603	10 28 15.7	113.45
5	2 34 21.90	19.612	10 39 34.8	112.91
6	2 36 19.60	19.621	10 50 50.6	112.36
7	2 38 17.35	19.630	11 2 3.1	111.80
8	2 40 15.16	19.641	11 13 12.2	111.24
9	2 42 13.04	19.652	11 24 18.0	110.68
10	2 44 10.98	19.662	11 35 20.3	110.09
11	2 46 8.98	19.673	11 46 19.1	109.50
12	2 48 7.06	19.686	11 57 14.3	108.91
13	2 50 5.21	19.698	12 8 6.0	108.33
14	2 52 3.43	19.710	12 18 54.2	107.73
15	2 54 1.73	19.723	12 29 38.7	107.11
16	2 56 0.11	19.738	12 40 19.5	106.49
17	2 57 58.58	19.752	12 50 56.6	105.87
18	2 59 57.13	19.765	13 1 29.9	105.23
19	3 1 55.76	19.780	13 11 59.4	104.60
20	3 3 54.49	19.796	13 22 25.1	103.96
21	3 5 53.31	19.811	13 32 46.9	103.31
22	3 7 52.22	19.827	13 43 4.8	102.65
23	3 9 51.23	19.843	N. 13 53 18.7	101.98

WEDNESDAY, JAN. 1, 1890.				
0	3 11 50.33	19.859	N. 14 3 28.6	101.32

PHASES OF THE MOON.

		h m
Dec. 6	○ Full Moon - - -	21 52.4
15	☾ Last Quarter - - -	2 58.3
22	● New Moon - - -	0 52.4
28	☾ First Quarter - - -	17 16.5

		h
Dec. 9	☾ Apogee - - - - -	20
22	☾ Perigee - - - - -	14

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^a .	P.L. of diff.	VI ^a .	P.L. of diff.	IX ^a .	P.L. of diff.
1	SUN W.	111 54 52	2978	113 25 32	2991	114 55 56	3003	116 26 5	3014
	Jupiter W.	80 38 13	2698	82 14 55	2710	83 51 22	2722	85 27 33	2732
	α Aquilæ W.	68 10 42	3448	69 32 4	3443	70 53 32	3438	72 15 5	3435
	Fomalhaut W.	32 29 50	3317	33 53 42	3274	35 18 26	3235	36 43 54	3202
	α Arietis E.	37 38 44	3013	36 9 12	3077	34 40 34	3127	33 12 57	3181
	Aldebaran E.	66 22 9	2635	64 44 2	2646	63 6 10	2658	61 28 34	2669
2	SUN W.	123 53 16	3072	125 22 0	3082	126 50 31	3092	128 18 50	3104
	Jupiter W.	93 24 53	2785	94 59 40	2796	96 34 13	2806	98 8 33	2815
	α Aquilæ W.	79 3 22	3435	80 24 59	3438	81 46 32	3442	83 8 1	3447
	Fomalhaut W.	43 59 6	3104	45 27 11	3092	46 55 30	3083	48 24 0	3075
	α Pegasi W.	33 9 54	2501	34 13 45	2566	35 19 37	2549	36 27 17	2545
	Aldebaran E.	53 24 15	2723	51 48 6	2734	50 12 11	2744	48 36 29	2794
	Pollux E.	97 37 18	2729	96 1 17	2738	94 25 28	2749	92 49 53	2758
3	α Aquilæ W.	89 53 44	3483	91 14 27	3493	92 34 59	3503	93 55 20	3514
	Fomalhaut W.	55 48 15	3058	57 17 16	3056	58 46 19	3056	60 15 22	3058
	α Pegasi W.	42 26 50	2792	43 42 1	2744	44 58 2	2701	46 14 48	2663
	Aldebaran E.	40 41 21	2804	39 6 58	2814	37 32 48	2824	35 58 51	2833
	Pollux E.	84 54 59	2804	83 20 36	2812	81 46 24	2821	80 12 24	2829
4	Fomalhaut W.	67 40 13	3066	69 9 4	3070	70 37 50	3073	72 6 32	3077
	α Pegasi W.	52 47 26	3529	54 7 18	3510	55 27 32	3494	56 48 3	3479
	Pollux E.	72 25 2	2869	70 52 4	2878	69 19 17	2886	67 46 40	2893
	Regulus E.	108 18 30	2862	106 45 23	2869	105 12 25	2877	103 39 37	2884
5	Fomalhaut W.	79 28 50	3099	80 57 1	3104	82 25 6	3109	83 53 5	3114
	α Pegasi W.	63 34 9	3429	64 55 53	3423	66 17 44	3417	67 39 41	3413
	Pollux E.	60 5 59	2931	58 34 20	2938	57 2 49	2946	55 31 28	2953
	Regulus E.	95 57 52	2919	94 25 57	2925	92 54 10	2931	91 22 31	2938
	Saturn E.	101 33 25	2922	100 1 34	2928	98 29 50	2934	96 58 14	2941
6	Fomalhaut W.	91 11 17	3143	92 38 35	3149	94 5 45	3156	95 32 47	3163
	α Pegasi W.	74 30 21	3403	75 52 34	3403	77 14 47	3403	78 37 0	3404
	α Arietis W.	30 56 15	3509	32 16 29	3471	33 37 26	3438	34 59 0	3409
	Pollux E.	47 56 59	2989	46 26 33	2996	44 56 15	2904	43 26 7	2911
	Regulus E.	83 46 17	2969	82 15 25	2974	80 44 40	2980	79 14 2	2986
	Saturn E.	89 24 13	2970	87 51 23	2976	86 20 40	2981	84 59 4	2987
7	α Pegasi W.	85 27 36	3416	86 49 34	3420	88 11 28	3424	89 33 17	3429
	α Arietis W.	41 53 37	3315	43 17 31	3303	44 41 39	3293	46 5 59	3283
	Pollux E.	35 57 50	3052	34 28 41	3060	32 59 42	3069	31 30 55	3079
	Regulus E.	71 42 39	3014	70 12 43	3018	68 42 53	3023	67 13 9	3028
	Saturn E.	77 18 47	3014	75 48 51	3018	74 19 1	3023	72 49 17	3027
8	α Pegasi W.	96 20 57	3457	97 42 9	3464	99 3 13	3471	100 24 9	3479
	α Arietis W.	53 9 55	3253	54 35 1	3248	56 0 13	3245	57 25 28	3242
	Aldebaran W.	20 52 29	3090	22 20 51	3087	23 49 16	3086	25 17 43	3085
	Regulus E.	59 45 57	3051	58 16 47	3056	56 47 43	3060	55 18 44	3064
	Saturn E.	65 22 0	3050	63 52 49	3053	62 23 42	3057	60 54 40	3061
	Mars E.	107 55 16	3267	106 30 26	3271	105 5 41	3275	103 41 0	3278

MEAN TIME.

LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XVh.	P.L. of diff.	XVIIIh.	P.L. of diff.	XXIh.	P.L. of diff.
1	Sun W.	117 56 0	3026	119 25 40	3038	120 55 6	3049	122 24 18	3060
	Jupiter W.	87 3 30	2744	88 39 12	2754	90 14 40	2766	91 49 53	2776
	α Aquilæ W.	73 36 42	3432	74 58 22	3431	76 20 3	3432	77 41 43	3433
	Fomalhaut W.	38 10 1	3174	39 36 41	3152	41 3 48	3133	42 31 17	3117
	α Arietis E.	31 46 24	3242	30 21 4	3310	28 57 4	3387	27 34 33	3479
	Aldebaran E.	59 51 13	2681	58 14 7	2691	56 37 15	2702	55 0 38	2713
2	Sun W.	129 46 55	3114	131 14 48	3124	132 42 28	3133	134 9 57	3143
	Jupiter W.	99 42 41	2825	101 16 36	2835	102 50 18	2844	104 23 49	2853
	α Aquilæ W.	84 29 24	3453	85 50 41	3460	87 11 50	3466	88 32 52	3474
	Fomalhaut W.	49 52 40	3070	51 21 26	3065	52 50 18	3061	54 19 15	3059
	α Pegasi W.	37 36 35	4055	38 47 20	3977	39 59 22	3907	41 12 35	3846
	Aldebaran E.	47 1 1	2764	45 25 46	2775	43 50 45	2784	42 15 56	2795
	Pollux E.	91 14 30	2767	89 39 19	2777	88 4 21	2785	86 29 34	2795
3	α Aquilæ W.	95 15 29	3525	96 35 25	3538	97 55 7	3552	99 14 34	3566
	Fomalhaut W.	61 44 23	3058	63 13 24	3060	64 42 23	3061	66 11 20	3064
	α Pegasi W.	47 32 14	3629	48 50 17	3599	50 8 52	3573	51 27 56	3549
	Aldebaran E.	34 25 6	2843	32 51 34	2854	31 18 16	2863	29 45 10	2873
	Pollux E.	78 38 34	2838	77 4 55	2846	75 31 27	2854	73 58 9	2862
4	Fomalhaut W.	73 35 10	3081	75 3 43	3086	76 32 10	3089	78 0 33	3094
	α Pegasi W.	58 8 51	3466	59 29 53	3454	60 51 8	3445	62 12 34	3437
	Pollux E.	66 14 12	2901	64 41 55	2909	63 9 47	2916	61 37 48	2924
	Regulus E.	102 6 58	2892	100 34 29	2898	99 2 8	2905	97 29 55	2912
5	Fomalhaut W.	85 20 57	3120	86 48 42	3125	88 16 21	3131	89 43 53	3138
	α Pegasi W.	69 1 42	3409	70 23 48	3407	71 45 57	3405	73 8 8	3403
	Pollux E.	54 0 16	2960	52 29 13	2967	50 58 19	2975	49 27 35	2981
	Regulus E.	89 51 1	2944	88 19 38	2950	86 48 23	2957	85 17 16	2963
	Saturn E.	95 26 47	2946	93 55 27	2953	92 24 15	2958	90 53 10	2965
6	Fomalhaut W.	96 59 41	3168	98 26 28	3175	99 53 6	3183	101 19 36	3190
	α Pegasi W.	79 59 12	3406	81 21 22	3408	82 43 30	3410	84 5 35	3414
	α Arietis W.	36 21 7	3385	37 43 41	3364	39 6 39	3345	40 29 59	3329
	Pollux E.	41 56 8	3019	40 26 19	3027	38 56 40	3034	37 27 10	3043
	Regulus E.	77 43 32	2992	76 13 9	2997	74 42 52	3002	73 12 42	3008
	Saturn E.	83 19 35	2993	81 49 13	2998	80 18 58	3003	78 48 49	3009
7	α Pegasi W.	90 55 1	3434	92 16 39	3439	93 38 11	3445	94 59 37	3450
	α Arietis W.	47 30 30	3276	48 55 10	3269	50 19 58	3263	51 44 53	3257
	Pollux E.	30 2 20	3090	28 33 58	3101	27 5 50	3114	25 37 57	3128
	Regulus E.	65 43 31	3033	64 13 59	3037	62 44 32	3043	61 15 12	3047
	Saturn E.	71 19 38	3033	69 50 6	3037	68 20 39	3041	66 51 17	3045
8	α Pegasi W.	101 44 57	3488	103 5 35	3496	104 26 5	3505	105 46 24	3514
	α Arietis W.	58 50 47	3239	60 16 10	3237	61 41 35	3236	63 7 2	3234
	Aldebaran W.	26 46 11	3085	28 14 39	3085	29 43 7	3085	31 11 35	3086
	Regulus E.	53 49 50	3068	52 21 1	3071	50 52 16	3075	49 23 36	3078
	Saturn E.	59 25 43	3065	57 56 50	3068	56 28 1	3071	54 59 16	3074
	Mars E.	102 16 23	3281	100 51 49	3285	99 27 20	3287	98 2 53	3290

MEAN TIME.
LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
9	<i>α</i> Arietis W.	64 32 31	3232	65 58 3	3231	67 23 36	3229	68 49 11	3228
	Aldebaran W.	32 40 1	3086	34 8 28	3087	35 36 53	3088	37 5 17	3088
	Regulus E.	47 55 0	3082	46 26 28	3086	44 58 1	3088	43 29 37	3091
	Saturn E.	53 30 35	3077	52 1 57	3079	50 33 22	3082	49 4 51	3085
	Mars E.	96 38 30	3294	95 14 11	3296	93 49 55	3298	92 25 41	3300
	Spica E.	101 56 11	3097	100 27 58	3100	98 59 48	3101	97 31 40	3103
10	<i>α</i> Arietis W.	75 57 25	3223	77 23 7	3221	78 48 52	3220	80 14 37	3218
	Aldebaran W.	44 27 10	3090	45 55 32	3089	47 23 55	3089	48 52 18	3089
	Regulus E.	36 8 34	3106	34 40 32	3109	33 12 33	3111	31 44 37	3114
	Saturn E.	41 42 53	3094	40 14 36	3096	38 46 21	3096	37 18 7	3097
	Mars E.	85 24 59	3306	84 0 54	3306	82 36 50	3306	81 12 46	3306
	Spica E.	90 11 27	3109	88 43 28	3110	87 15 30	3110	85 47 32	3110
11	<i>α</i> Arietis W.	87 23 52	3210	88 49 49	3208	90 15 49	3205	91 41 52	3204
	Aldebaran W.	56 14 28	3082	57 43 0	3079	59 11 35	3077	60 40 13	3073
	Saturn E.	29 57 12	3101	28 29 4	3101	27 0 56	3103	25 32 50	3104
	Mars E.	74 12 19	3302	72 48 10	3300	71 23 58	3297	69 59 43	3294
	Spica E.	78 27 38	3106	76 59 36	3105	75 31 32	3103	74 3 26	3102
12	<i>α</i> Arietis W.	98 52 50	3189	100 19 13	3186	101 45 39	3181	103 12 12	3178
	Aldebaran W.	68 4 25	3055	69 33 30	3049	71 2 42	3044	72 32 0	3039
	Pollux W.	24 11 53	3140	25 39 14	3125	27 6 53	3112	28 34 48	3099
	Mars E.	62 57 36	3276	61 32 57	3271	60 8 12	3266	58 43 21	3260
	Spica E.	66 42 10	3086	65 13 43	3082	63 45 12	3078	62 16 35	3073
	Sun E.	124 50 7	3435	123 28 30	3429	122 6 46	3423	120 44 56	3417
13	Aldebaran W.	80 0 28	3003	81 30 37	2996	83 0 55	2987	84 31 24	2978
	Pollux W.	35 58 2	3042	37 27 23	3031	38 56 57	3020	40 26 45	3009
	Mars E.	51 37 16	3226	50 11 38	3219	48 45 51	3210	47 19 54	3202
	Spica E.	54 52 2	3047	53 22 47	3041	51 53 25	3034	50 23 55	3028
	Sun E.	113 53 50	3379	112 31 10	3371	111 8 20	3361	109 45 19	3351
14	Aldebaran W.	92 6 50	2927	93 38 35	2916	95 10 34	2904	96 42 48	2891
	Pollux W.	47 59 21	2949	49 30 38	2936	51 2 11	2923	52 34 1	2909
	Mars E.	40 7 25	3153	38 40 19	3143	37 13 1	3131	35 45 29	3119
	Spica E.	42 54 20	2993	41 23 59	2987	39 53 30	2980	38 22 52	2974
	Sun E.	102 47 15	3295	101 22 58	3283	99 58 27	3270	98 33 40	3257
15	Pollux W.	60 17 33	2838	61 51 12	2823	63 25 10	2807	64 59 29	2792
	Regulus W.	24 27 48	2873	26 0 42	2852	27 34 3	2831	29 7 50	2812
	Mars E.	28 24 22	3063	26 55 27	3052	25 26 18	3041	23 56 56	3030
	Spica E.	30 47 57	2951	29 16 43	2950	27 45 28	2952	26 14 15	2956
	Sun E.	91 25 41	3183	89 59 12	3167	88 32 23	3151	87 5 15	3134
16	Pollux W.	72 56 22	2707	74 32 52	2690	76 9 45	2672	77 47 2	2654
	Regulus W.	37 3 1	2716	38 39 19	2698	40 16 2	2678	41 53 11	2659
	Saturn W.	31 20 47	2711	32 57 12	2692	34 34 2	2672	36 11 19	2654
	Sun E.	79 44 21	3045	78 15 4	3026	76 45 24	3007	75 15 20	2988
17	Pollux W.	85 59 40	2561	87 39 28	2543	89 19 42	2523	91 0 23	2504
	Regulus W.	50 5 29	2561	51 45 17	2542	53 25 32	2522	55 6 14	2503
	Saturn W.	44 24 15	2556	46 4 10	2536	47 44 33	2517	49 25 23	2497
	Sun E.	67 38 52	2838	66 6 18	2868	64 33 18	2847	62 59 51	2827

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LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^b .	P.L. of diff.	XVIII ^b .	P.L. of diff.	XXI ^b .	P.L. of diff.
		° ' "		° ' "		° ' "		° ' "	
9	α Arietis W.	70 14 47	3227	71 40 24	3225	73 6 3	3225	74 31 43	3223
	Aldebaran W.	38 33 41	3089	40 2 4	3089	41 30 27	3091	42 58 48	3090
	Regulus E.	42 1 17	3095	40 33 1	3098	39 4 49	3101	37 36 40	3103
	Saturn E.	47 36 23	3087	46 7 57	3088	44 39 33	3091	43 11 12	3092
	Mars E.	91 1 29	3301	89 37 19	3303	88 13 11	3304	86 49 4	3306
	Spica E.	96 3 34	3105	94 35 30	3106	93 7 28	3107	91 39 27	3108
10	α Arietis W.	81 40 25	3218	83 6 13	3215	84 32 4	3214	85 57 57	3212
	Aldebaran W.	50 20 41	3088	51 49 5	3087	53 17 31	3085	54 45 59	3084
	Regulus E.	30 16 45	3118	28 48 57	3122	27 21 14	3125	25 53 35	3128
	Saturn E.	35 49 54	3098	34 21 42	3099	32 53 31	3100	31 25 21	3101
	Mars E.	79 48 42	3306	78 24 38	3306	77 0 33	3305	75 36 27	3303
	Spica E.	84 19 35	3110	82 51 37	3109	81 23 38	3109	79 55 39	3107
11	α Arietis W.	93 7 57	3201	94 34 5	3198	96 0 17	3195	97 26 32	3193
	Aldebaran W.	62 8 55	3071	63 37 40	3067	65 6 30	3063	66 35 25	3059
	Saturn E.	24 4 45	3105	22 36 41	3107	21 8 40	3110	19 40 43	3114
	Mars E.	68 35 25	3292	67 11 4	3288	65 46 39	3285	64 22 10	3281
	Spica E.	72 35 18	3098	71 7 6	3096	69 38 51	3093	68 10 33	3089
12	α Arietis W.	104 38 47	3174	106 5 27	3170	107 32 12	3165	108 59 3	3161
	Aldebaran W.	74 1 25	3032	75 30 58	3026	77 0 39	3018	78 30 29	3011
	Pollux W.	30 2 59	3087	31 31 24	3076	33 0 3	3065	34 28 56	3054
	Mars E.	57 18 23	3254	55 53 18	3248	54 28 6	3241	53 2 45	3234
	Spica E.	60 47 53	3069	59 19 5	3064	57 50 11	3058	56 21 10	3052
	Sun E.	119 22 59	3410	118 0 54	3403	116 38 41	3396	115 16 20	3388
13	Aldebaran W.	86 2 5	2969	87 32 57	2958	89 4 2	2949	90 35 19	2938
	Pollux W.	41 56 47	2997	43 27 3	2985	44 57 34	2973	46 28 20	2962
	Mars E.	45 53 47	3193	44 27 29	3183	43 0 59	3173	41 34 18	3163
	Spica E.	48 54 17	3021	47 24 30	3014	45 54 35	3008	44 24 32	3001
	Sun E.	108 22 7	3341	106 58 43	3330	105 35 6	3319	104 11 17	3308
14	Aldebaran W.	98 15 18	2878	99 48 5	2866	101 21 8	2852	102 54 28	2839
	Pollux W.	54 6 8	2896	55 38 32	2882	57 11 14	2868	58 44 14	2853
	Mars E.	34 17 43	3109	32 49 44	3097	31 21 31	3086	29 53 4	3074
	Spica E.	36 52 7	2968	35 21 14	2962	33 50 13	2958	32 19 7	2954
	Sun E.	97 8 38	3243	95 43 20	3228	94 17 44	3214	92 51 52	3198
15	Pollux W.	66 34 8	2775	68 9 8	2758	69 44 31	2742	71 20 15	2725
	Regulus W.	30 42 2	2793	32 16 39	2774	33 51 41	2755	35 27 8	2735
	Mars E.	22 27 21	3022	20 57 36	3014	19 27 41	3009	17 57 39	3005
	Spica E.	24 43 7	2964	23 12 9	2977	21 41 27	2996	20 11 9	3025
	Sun E.	85 37 47	3116	84 9 57	3100	82 41 47	3082	81 13 15	3064
16	Pollux W.	79 24 44	2636	81 2 50	2617	82 41 22	2599	84 20 18	2580
	Regulus W.	43 30 46	2640	45 8 47	2620	46 47 15	2601	48 26 9	2582
	Saturn W.	37 49 1	2634	39 27 10	2615	41 5 45	2596	42 44 46	2575
	Sun E.	73 44 52	2969	72 14 0	2949	70 42 43	2928	69 11 0	2909
17	Pollux W.	92 41 30	2485	94 23 4	2466	96 5 5	2447	97 47 33	2429
	Regulus W.	56 47 23	2483	58 29 0	2463	60 11 5	2443	61 53 38	2424
	Saturn W.	51 6 41	2477	52 48 26	2458	54 30 39	2438	56 13 20	2418
	Sun E.	61 25 58	2805	59 51 37	2785	58 16 50	2764	56 41 35	2744

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LUNAR DISTANCES.

Day.	Star's Name and Position.	Noon.	P.L. of diff.	III ^h .	P.L. of diff.	VI ^h .	P.L. of diff.	IX ^h .	P.L. of diff.
18	Pollux W.	99 30 27	2409	101 13 49	2390	102 57 38	2371	104 41 54	2353
	Regulus W.	63 36 38	2404	65 20 7	2385	67 4 3	2366	68 48 27	2347
	Saturn W.	57 56 29	2398	59 40 6	2379	61 24 11	2360	63 8 43	2341
	SUN E.	55 5 53	2723	53 29 44	2702	51 53 7	2682	50 16 2	2661
19	Regulus W.	77 37 47	2354	79 24 24	2237	81 11 37	2220	82 59 35	2202
	Saturn W.	71 58 19	2248	73 45 35	2231	75 33 17	2213	77 21 25	2196
	Spica W.	24 20 36	2433	26 3 24	2392	27 47 10	2356	29 31 48	2324
	SUN E.	42 3 55	2563	40 24 9	2545	38 43 58	2525	37 3 20	2507
20	Regulus W.	92 5 53	2125	93 56 14	2111	95 46 56	2098	97 37 58	2085
	Saturn W.	86 28 14	2118	88 18 45	2104	90 9 38	2090	92 0 52	2078
	Spica W.	38 25 29	2198	40 13 59	2178	42 3 0	2159	43 52 29	2142
	SUN E.	28 34 9	2425	26 51 10	2410	25 7 49	2396	23 24 8	2382
24	SUN W.	27 51 50	2328	29 37 9	2337	31 22 14	2348	33 7 3	2360
	α Pegasi E.	54 51 50	2692	53 14 59	2735	51 39 6	2782	50 4 15	2835
	α Arietis E.	95 45 52	2164	93 56 30	2172	92 7 21	2182	90 18 27	2193
25	SUN W.	41 46 39	2427	43 29 35	2442	45 12 10	2458	46 54 23	2473
	α Pegasi E.	42 29 19	3194	41 3 3	3291	39 38 41	3400	38 16 24	3523
	α Arietis E.	81 18 25	2260	79 31 26	2275	77 44 50	2291	75 58 38	2309
26	SUN W.	55 19 44	2558	56 59 37	2576	58 39 5	2594	60 18 8	2612
	α Arietis E.	67 14 14	2405	65 30 46	2426	63 47 49	2448	62 5 23	2472
	Aldebaran E.	97 34 38	2246	95 47 19	2262	94 0 44	2279	92 13 54	2296
27	SUN W.	68 27 10	2705	70 3 43	2724	71 39 51	2742	73 15 35	2762
	α Arietis E.	53 41 35	2597	52 2 36	2626	50 24 16	2655	48 46 36	2685
	Aldebaran E.	83 27 39	2382	81 43 39	2400	80 0 5	2417	78 16 55	2435
28	SUN W.	81 8 2	2854	82 41 20	2873	84 14 44	2891	85 46 45	2908
	Fomalhaut W.	29 36 49	3346	31 0 7	3285	32 24 36	3236	33 50 3	3195
	α Arietis E.	40 49 6	2865	39 16 2	2907	37 43 52	2954	36 12 41	3004
	Aldebaran E.	69 47 16	2522	68 6 33	2538	66 26 13	2555	64 46 16	2572
29	SUN W.	93 23 46	2994	94 54 6	3010	96 24 6	3027	97 53 45	3043
	Fomalhaut W.	41 6 57	3079	42 35 32	3069	44 4 20	3060	45 33 19	3053
	α Arietis E.	28 54 23	3345	27 31 4	3442	26 9 35	3554	24 50 10	3684
	Aldebaran E.	56 32 13	2653	54 54 30	2669	53 17 8	2683	51 40 6	2699
	Pollux E.	100 45 34	2660	99 8 0	2675	97 30 46	2689	95 53 52	2704
30	SUN W.	105 17 16	3118	106 45 5	3132	108 12 36	3146	109 39 50	3158
	Fomalhaut W.	52 59 28	3046	54 28 44	3047	55 57 58	3049	57 27 10	3053
	α Pegasi W.	40 9 15	3890	41 22 45	3834	42 37 12	3783	43 52 32	3739
	Aldebaran E.	43 39 55	2770	42 4 48	2785	40 30 0	2799	38 55 31	2813
	Pollux E.	87 54 4	2772	86 19 0	2785	84 44 13	2798	83 9 43	2810
31	SUN W.	116 52 17	3221	118 17 55	3231	119 43 27	3243	121 8 45	3254
	Fomalhaut W.	64 51 59	3074	66 20 40	3079	67 49 15	3085	69 17 43	3090
	α Pegasi W.	50 19 6	3587	51 37 55	3566	52 57 7	3548	54 16 38	3531
	Aldebaran E.	31 7 23	2879	29 34 37	2891	28 2 6	2905	26 29 53	2918
	Pollux E.	75 21 5	2869	73 48 6	2879	72 15 20	2889	70 42 47	2900

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LUNAR DISTANCES.

Day.	Star's Name and Position.	Midnight.	P.L. of diff.	XV ^h .	P.L. of diff.	XVIII ^h .	P.L. of diff.	XXI ^h .	P.L. of diff.
18.	Pollux W.	106° 26' 37"	2335	108° 11' 46"	2316	109° 57' 22"	2299	111° 43' 23"	2281
	Regulus W.	70° 33' 18"	2328	72° 18' 37"	2309	74° 4' 24"	2291	75° 50' 37"	2272
	Saturn W.	64° 53' 43"	2322	66° 39' 11"	2303	68° 25' 7"	2285	70° 11' 29"	2266
	SUN E.	48° 38' 31"	2641	47° 0' 32"	2622	45° 22' 7"	2602	43° 43' 14"	2583
19	Regulus W.	84° 48' 19"	2186	86° 37' 7"	2170	88° 26' 19"	2155	90° 15' 55"	2140
	Saturn W.	79° 9' 58"	2179	80° 58' 57"	2164	82° 48' 19"	2148	84° 38' 5"	2133
	Spica W.	31° 17' 12"	2294	33° 3' 20"	2268	34° 50' 7"	2243	36° 37' 31"	2220
	SUN E.	35° 22' 18"	2491	33° 40' 52"	2473	31° 59' 1"	2456	30° 16' 46"	2441
20	Regulus W.	99° 29' 20"	2073	101° 21' 1"	2062	103° 12' 59"	2051	105° 5' 14"	2041
	Saturn W.	93° 52' 25"	2065	95° 44' 18"	2054	97° 36' 28"	2043	99° 28' 55"	2033
	Spica W.	45° 42' 24"	2126	47° 32' 44"	2110	49° 23' 28"	2096	51° 14' 33"	2084
	SUN E.	21° 40' 7"	2368	19° 55' 47"	2356	18° 11' 9"	2345	16° 26' 15"	2334
24	SUN W.	34° 51' 35"	2373	36° 35' 49"	2385	38° 19' 45"	2398	40° 3' 22"	2412
	α Pegasi E.	48° 30' 33"	2893	46° 58' 5"	2957	45° 26' 58"	3028	43° 57' 20"	3107
	α Arietis E.	88° 29' 49"	2205	86° 41' 29"	2217	84° 53' 27"	2231	83° 5' 46"	2245
25	SUN W.	48° 36' 14"	2489	50° 17' 42"	2507	51° 58' 46"	2523	53° 39' 27"	2540
	α Pegasi E.	36° 56' 25"	3660	35° 38' 55"	3845	34° 24' 8"	3992	33° 12' 21"	4193
	α Arietis E.	74° 12' 52"	2326	72° 27' 31"	2345	70° 42' 37"	2364	68° 58' 11"	2384
26	SUN W.	61° 56' 47"	2631	63° 35' 0"	2649	65° 12' 49"	2668	66° 50' 12"	2687
	α Arietis E.	60° 23' 30"	2495	58° 42' 9"	2519	57° 1' 22"	2544	55° 21' 10"	2571
	Aldebaran E.	90° 27' 49"	2313	88° 42' 9"	2331	86° 56' 54"	2348	85° 12' 4"	2365
27	SUN W.	74° 50' 53"	2780	76° 25' 47"	2799	78° 0' 16"	2818	79° 34' 21"	2836
	α Arietis E.	47° 9' 36"	2718	45° 33' 20"	2751	43° 57' 48"	2786	42° 23' 2"	2825
	Aldebaran E.	76° 34' 40"	2453	74° 51' 50"	2470	73° 9' 54"	2487	71° 28' 23"	2504
28	SUN W.	87° 18' 54"	2926	88° 50' 39"	2943	90° 22' 3"	2961	91° 53' 5"	2977
	Fomalhaut W.	35° 16' 19"	3161	36° 43' 15"	3133	38° 10' 44"	3111	39° 38' 40"	3094
	α Arietis E.	34° 42' 33"	3059	33° 13' 33"	3119	31° 45' 46"	3186	30° 19' 20"	3261
	Aldebaran E.	63° 6' 43"	2588	61° 27' 32"	2605	59° 48' 44"	2621	58° 10' 18"	2637
29	SUN W.	99° 23' 5"	3058	100° 52' 6"	3074	102° 20' 47"	3088	103° 49' 11"	3104
	Fomalhaut W.	47° 2' 26"	3049	48° 31' 38"	3047	50° 0' 53"	3045	51° 30' 10"	3044
	α Arietis E.	23° 33' 6"	3837	22° 18' 42"	4020	21° 7' 22"	4241	19° 59' 35"	4511
	Aldebaran E.	50° 3' 25"	2714	48° 27' 4"	2729	46° 51' 2"	2743	45° 15' 19"	2757
	Pollux E.	94° 17' 17"	2718	92° 41' 1"	2732	91° 5' 4"	2746	89° 29' 25"	2760
30	SUN W.	111° 6' 49"	3172	112° 33' 32"	3185	113° 59' 59"	3197	115° 26' 12"	3209
	Fomalhaut W.	58° 56' 17"	3056	60° 25' 21"	3060	61° 54' 19"	3065	63° 23' 12"	3069
	α Pegasi W.	45° 8' 38"	3701	46° 25' 24"	3666	47° 42' 47"	3636	49° 0' 42"	3610
	Aldebaran E.	37° 24' 20"	2825	35° 47' 25"	2839	34° 13' 48"	2852	32° 40' 27"	2865
	Pollux E.	81° 35' 28"	2823	80° 1' 30"	2835	78° 27' 47"	2846	76° 54' 19"	2857
31	SUN W.	122° 33' 50"	3264	123° 58' 44"	3274	125° 23' 26"	3284	126° 47' 56"	3294
	Fomalhaut W.	70° 46' 5"	3096	72° 14' 20"	3101	73° 42' 28"	3107	75° 10' 29"	3113
	α Pegasi W.	55° 36' 28"	3517	56° 56' 33"	3505	58° 16' 52"	3494	59° 37' 23"	3484
	Aldebaran E.	24° 57' 57"	2932	23° 26' 19"	2947	21° 55' 0"	2962	20° 24' 0"	2977
	Pollux E.	69° 10' 28"	2909	67° 38' 21"	2919	66° 6' 26"	2928	64° 34' 43"	2938

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Solitude.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
Jan. 1	+	+		-	-		-	-		23° 27'
2	0° 1934009	0° 2019738	+ 739	0° 8843907	0° 8827783	+ 211	0° 3836730	0° 3829739	- 112	9° 30'
3	2° 2105308	2° 2190713	722	8° 8810967	8° 8793459	218	38° 22448	38° 14859	105	9° 33'
4	2° 2275944	2° 2360994	705	8° 8775263	8° 8756380	225	38° 06970	37° 98782	98	9° 37'
5	2° 2445857	2° 2530528	691	8° 8736814	8° 8716656	233	37° 90297	37° 81518	91	9° 43'
6	2° 2614997	2° 2699257	681	8° 8695637	8° 8674030	241	37° 74443	37° 63071	84	9° 48'
7	0° 2783302	0° 2867127	+ 673	0° 8651747	0° 8628792	+ 250	0° 3753406	0° 3743451	- 77	9° 52'
8	2° 2950725	2° 3034089	666	8° 8605164	8° 8580866	259	37° 33204	37° 22664	71	9° 55'
9	3° 3117213	3° 3200092	659	8° 8555900	8° 8530269	268	37° 11835	37° 00716	65	9° 56'
10	3° 3282718	3° 3365085	651	8° 8503976	8° 8477024	277	36° 89310	36° 77617	60	9° 57'
11	3° 3447187	3° 3529018	641	8° 8449414	8° 8421149	285	36° 65638	36° 53374	55	9° 56'
12	0° 3610572	0° 3691845	+ 630	0° 8392233	0° 8362667	+ 293	0° 3640827	0° 3627999	- 51	9° 54'
13	3° 3772828	3° 3853515	616	8° 8332453	8° 8301592	300	36° 14890	36° 01499	48	9° 53'
14	3° 3933901	3° 4013981	602	8° 8270087	8° 8237945	305	35° 87828	35° 73880	45	9° 52'
15	4° 4093749	4° 4173198	587	8° 8205166	8° 8171751	310	35° 59657	35° 45159	41	9° 53'
16	4° 4252323	4° 4331117	571	8° 8137703	8° 8103026	314	35° 30386	35° 15340	37	9° 55'
17	0° 4409575	0° 4487691	+ 556	0° 8067724	0° 8031799	+ 318	0° 3500024	0° 3484435	- 32	9° 59'
18	4° 4565460	4° 4642877	542	7° 7995253	7° 7958089	321	34° 68578	34° 52454	27	9° 64'
19	4° 4719935	4° 4796629	529	7° 7920311	7° 7881920	324	34° 36064	34° 19407	21	9° 70'
20	4° 4872953	4° 4948901	518	7° 7842920	7° 7803312	328	34° 02486	33° 85301	15	9° 76'
21	5° 5024468	5° 5099649	509	7° 7763100	7° 7722287	333	33° 67855	33° 50149	9	9° 81'
22	0° 5174437	0° 5248828	+ 501	0° 7680877	0° 7638872	+ 338	0° 3332184	0° 3313960	- 3	9° 86'
23	5° 5322816	5° 5396397	492	7° 7596274	7° 7553085	344	32° 95479	32° 76742	+ 3	9° 89'
24	5° 5469564	5° 5542308	484	7° 7509311	7° 7464952	349	32° 57750	32° 38506	8	9° 90'
25	5° 5614627	5° 5686517	475	7° 7420013	7° 7374498	354	32° 19010	31° 99265	11	9° 89'
26	5° 5757971	5° 5828981	464	7° 7328408	7° 7281745	358	31° 79270	31° 59028	14	9° 87'
27	0° 5899544	0° 5969628	+ 451	0° 7234514	0° 7186718	+ 361	0° 3138540	0° 3117807	+ 16	9° 86'
28	6° 6039294	6° 6108475	437	7° 7138362	7° 7089450	362	30° 96831	30° 75614	18	9° 86'
29	6° 6177185	6° 6245418	423	7° 7039985	7° 6989970	362	30° 54158	30° 32464	21	9° 87'
30	6° 6313166	6° 6380423	408	6° 6939409	6° 6888307	362	30° 10534	29° 88369	24	9° 90'
31	6° 6447183	6° 6513443	394	6° 6836669	6° 6784499	362	29° 65972	29° 43344	27	9° 95'
Feb. 1	0° 6579196	0° 6644438	+ 382	0° 6731802	0° 6678582	+ 361	0° 2920487	0° 2897404	+ 32	10° 02'
2	6° 6709163	6° 6773365	372	6° 6624843	6° 6570592	361	28° 74095	28° 50563	37	10° 09'
3	6° 6837040	6° 6900183	363	6° 6515832	6° 6460567	362	28° 62809	28° 02836	42	10° 15'
4	6° 6962788	6° 7024852	355	6° 6404803	6° 6348546	365	27° 78647	27° 54243	47	10° 19'
5	6° 7086370	6° 7147336	347	6° 6291799	6° 6234568	368	27° 29626	27° 04798	51	10° 22'
6	0° 7207748	0° 7267603	+ 339	0° 6176857	0° 6118669	+ 371	0° 2679761	0° 2654518	+ 55	10° 23'
7	6° 7326894	6° 7385615	330	6° 6060012	6° 6000890	374	26° 29069	26° 03419	58	10° 23'
8	6° 7443764	6° 7501339	321	5° 5941309	5° 5881271	375	25° 77570	25° 51522	61	10° 23'
9	6° 7558334	6° 7614746	310	5° 5820782	5° 5759849	374	25° 52528	24° 98841	63	10° 22'
10	6° 7670570	6° 7725802	298	5° 5698476	5° 5636666	373	24° 72212	24° 45395	64	10° 21'
11	0° 7780438	0° 7834477	+ 286	0° 5574427	0° 5511763	+ 371	0° 2418391	0° 2391203	+ 65	10° 22'
12	6° 787913	6° 7940742	274	5° 5448678	5° 5385177	368	23° 63832	23° 36282	66	10° 24'
13	6° 7992961	6° 804568	262	5° 5321266	5° 5256951	365	23° 08553	22° 80648	68	10° 27'
14	6° 8095558	6° 8145929	251	5° 5192236	5° 5127125	361	22° 52570	22° 24320	70	10° 33'
15	6° 8195676	6° 8244798	241	5° 5061623	5° 4995738	357	21° 95900	21° 67315	73	10° 38'
16	0° 8293289	0° 8341146	+ 231	0° 4929472	0° 4862830	+ 355	0° 2138565	0° 2109652	+ 76	10° 45'

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity.
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.
Feb. 16	0° 8388367	0° 8434949	+ 223	0° 4795817	0° 4728438	+ 355	0° 2080577	0° 2051343	+ 79	23° 27'
17	0° 8480889	0° 8526185	215	0° 4660699	0° 4592605	356	0° 2021954	0° 1992412	83	10° 50
18	0° 8570832	0° 8614829	208	0° 4524161	0° 4455370	358	0° 1962717	0° 1932873	87	10° 59
19	0° 8658170	0° 8700852	202	0° 4386237	0° 4316766	359	0° 1902880	0° 1872740	90	10° 61
20	0° 8742873	0° 8784232	194	0° 4246963	0° 4176834	360	0° 1842457	0° 1812033	92	10° 60
21	0° 8824924	0° 8864946	+ 186	0° 4106383	0° 4035615	+ 360	0° 1781470	0° 1750770	+ 94	10° 58
22	0° 8904294	0° 8942966	177	0° 3964534	0° 3893147	358	0° 1719935	0° 1688967	94	10° 57
23	0° 8980957	0° 9018264	168	0° 3821460	0° 3749477	354	0° 1657868	0° 1626643	95	10° 56
24	0° 9054884	0° 9090815	158	0° 3677205	0° 3604648	348	0° 1595292	0° 1563817	95	10° 56
25	0° 9126053	0° 9160595	148	0° 3531811	0° 3458700	341	0° 1532221	0° 1500507	95	10° 58
26	0° 9194438	0° 9227581	+ 139	0° 3385322	0° 3311684	+ 334	0° 1468678	0° 1436736	+ 96	10° 62
27	0° 9260019	0° 9291748	130	0° 3237792	0° 3163650	329	0° 1404682	0° 1372521	97	10° 67
28	0° 9322768	0° 9353078	122	0° 3089265	0° 3014645	326	0° 1340253	0° 1307884	98	10° 74
Mar. 1	0° 9382676	0° 9411557	115	0° 2939794	0° 2864719	324	0° 1275414	0° 1242846	100	10° 79
2	0° 9439719	0° 9467161	109	0° 2789425	0° 2713921	324	0° 1210183	0° 1177429	102	10° 84
3	0° 9493881	0° 9519876	+ 103	0° 263210	0° 2562300	+ 325	0° 1144584	0° 1111652	+ 105	10° 87
4	0° 9545146	0° 9566691	96	0° 2486196	0° 2409904	325	0° 1078635	0° 1045536	107	10° 87
5	0° 9593507	0° 9616592	90	0° 2333431	0° 2256783	324	0° 1012359	0° 979106	109	10° 86
6	0° 9638947	0° 9660572	84	0° 2179967	0° 2102988	322	0° 945779	0° 912381	110	10° 84
7	0° 9684166	0° 9701624	77	0° 2025853	0° 1948566	319	0° 8878916	0° 845384	111	10° 82
8	0° 9722046	0° 9739732	+ 70	0° 1871135	0° 1793565	+ 315	0° 811789	0° 778133	+ 111	10° 81
9	0° 9757682	0° 9774896	63	0° 1715863	0° 1638035	309	0° 744419	0° 710653	111	10° 80
10	0° 9791373	0° 9807113	56	0° 1560087	0° 1482025	302	0° 6676835	0° 634967	110	10° 80
11	0° 9822113	0° 9836373	49	0° 1403855	0° 1325583	294	0° 6009050	0° 557089	108	10° 81
12	0° 9849893	0° 9862675	42	0° 1247215	0° 1168756	287	0° 541087	0° 507045	107	10° 84
13	0° 9874718	0° 9886019	+ 36	0° 1090213	0° 1011591	+ 280	0° 472967	0° 4438856	+ 107	10° 88
14	0° 9896579	0° 9906397	30	0° 9282896	0° 8541134	275	0° 404713	0° 370539	107	10° 93
15	0° 9915475	0° 9923812	24	0° 775310	0° 696430	272	0° 336340	0° 302117	108	10° 98
16	0° 9931409	0° 9938266	19	0° 6617501	0° 5538526	271	0° 267872	0° 233608	109	11° 02
17	0° 9944382	0° 9949758	15	0° 5459512	0° 4380464	270	0° 199327	0° 165031	111	11° 04
18	0° 9954393	0° 9958286	+ 10	0° 4301387	0° 3222285	+ 269	0° 130723	0° 096406	+ 113	11° 05
19	0° 9961437	0° 9963847	+ 5	0° 3143165	0° 2064032	268	0° 062081	0° 027750	115	11° 04
20	0° 9965516	0° 9966444	0	0° 20015108	0° 094251	266	0° 0006583	0° 0040917	115	11° 02
21	0° 9966632	0° 9966077	- 5	0° 173390	0° 525219	262	0° 0075248	0° 0109576	115	10° 98
22	0° 9964779	0° 9962740	10	0° 331635	0° 410731	255	0° 0143897	0° 0178208	114	10° 95
23	0° 9959958	0° 9956434	- 15	0° 0489802	0° 0568839	+ 246	0° 0212508	0° 0246794	+ 113	10° 93
24	0° 9952168	0° 9947160	19	0° 0647837	0° 026792	237	0° 0281064	0° 0315114	112	10° 93
25	0° 9941410	0° 9934921	23	0° 0805697	0° 0884545	229	0° 0349542	0° 0383746	110	10° 95
26	0° 9927690	0° 9919717	27	0° 0963330	0° 1042046	221	0° 0417923	0° 0452069	108	10° 98
27	0° 9911004	0° 9901553	30	0° 1120687	0° 1199247	215	0° 0486184	0° 0520263	107	11° 02
28	0° 9891362	0° 9880433	- 33	0° 1277719	0° 1356099	+ 212	0° 0554305	0° 0588307	+ 107	11° 06
29	0° 9868767	0° 9856365	37	0° 1434379	0° 1512551	211	0° 0622266	0° 0656179	108	11° 09
30	0° 9843229	0° 9829359	41	0° 1590613	0° 1668557	209	0° 0690044	0° 0723858	109	11° 11
31	0° 9814758	0° 9799427	45	0° 1746378	0° 1824068	206	0° 0757618	0° 0791323	110	11° 10
Apr. 1	0° 9783366	0° 9766576	49	0° 1901622	0° 1979034	203	0° 0824969	0° 0858554	111	11° 09
2	0° 9749060	0° 9730822	- 52	0° 2056298	0° 2133409	+ 200	0° 0892075	0° 0925530	+ 112	11° 07

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
Apr. 3	+	+	55	+	+	+	+	+	+	23°27'
4	0°9711862	0°9692183	58	0°2210359	0°2287145	195	0°0958915	0°0992228	112	11°03
5	°9671786	°9650675	60	°2363758	°2440195	188	°1025468	°1058631	111	10°98
6	°9628850	°9606311	61	°2516448	°2592512	180	°1091715	°1124717	110	10°95
7	°9583064	°9559112	61	°2668382	°2744053	172	°1157634	°1190465	109	10°94
8	°9534456	°9509097	61	°2819517	°2894772	162	°1223208	°1255859	107	10°93
9	0°9483042	0°9456291	62	0°2969811	0°3044627	153	0°1288417	0°1320879	104	10°94
10	°9428846	°9400710	62	°3119215	°3193569	145	°1353241	°1385502	102	10°96
11	°9371885	°9342375	63	°3267687	°3341562	137	°1417660	°1449714	100	10°98
12	°9312181	°9281308	64	°3415189	°3488563	132	°1481659	°1513494	99	11°02
13	°9249759	°9217538	66	°3561679	°3634534	128	°1545217	°1576827	99	11°04
14	0°9184646	0°9151085	68	0°3707120	0°3779434	126	0°1608319	0°1639693	99	11°05
15	°9116858	°9081969	71	°3851471	°3923228	124	°1670946	°1702077	100	11°05
16	°9046421	°9010215	73	°3994699	°4065878	122	°1733084	°1763964	101	11°03
17	°8973354	°8935842	75	°4136762	°4207349	118	°1794715	°1825336	102	10°99
18	°8897680	°8858869	75	°4277633	°4347609	112	°1855825	°1886182	102	10°93
19	0°8819415	0°8779322	74	0°4417271	0°4486615	105	0°1916401	0°1946481	102	10°89
20	°8738591	°8697222	72	°4555636	°4624330	96	°1976421	°2006220	101	10°86
21	°8655220	°8612587	69	°4692693	°4760716	85	°2035874	°2065381	99	10°84
22	°8569327	°8525442	66	°4828397	°4895732	75	°2094740	°2123949	97	10°85
23	°8480936	°8435812	63	°4962713	°5029336	67	°2153005	°2181906	94	10°86
24	0°8390072	0°8343722	61	0°5095597	0°5161491	60	0°2210650	0°2239234	92	10°89
25	°8296762	°8249195	60	°5227012	°5292155	55	°2267658	°2295918	91	10°92
26	°8201026	°8152260	59	°5356916	°5421289	51	°2324011	°2351936	90	10°94
27	°8102900	°8052949	59	°5485269	°5548852	48	°2379692	°2407275	90	10°95
28	°8002410	°7951286	60	°5612032	°5674806	46	°2434683	°2461917	91	10°94
29	0°7899583	0°7847305	60	0°5737168	0°5799115	43	0°2488972	0°2515846	92	10°92
30	°7794456	°7741042	59	°5860641	°5921743	38	°2542538	°2569046	92	10°88
May 1	°7687066	°7632529	57	°5982415	°6042652	32	°2595368	°2621502	93	10°83
2	°7577439	°7521801	53	°6102449	°6161804	25	°2647446	°2673198	93	10°78
3	°7465617	°7408892	49	°6220710	°6279166	18	°2698755	°2724118	93	10°74
4	0°7351631	0°7293841	44	0°6337167	0°6394706	10	0°2749282	0°2774246	92	10°71
5	°7235526	°7176689	37	°6451781	°6508387	2	°2799009	°2823570	91	10°69
6	°7117336	°7057473	30	°6564521	°6620182	6	°2847928	°2872079	89	10°69
7	°6997103	°6936232	24	°6675364	°6730060	13	°2896021	°2919753	87	10°69
8	°6874864	°6813006	18	°6784268	°6837986	19	°2943273	°2966581	85	10°71
9	0°6750660	0°6687832	12	0°6891209	0°6943935	24	0°2989675	0°3012552	84	10°74
10	°6624526	°6560750	8	°6996160	°7047882	28	°3035212	°3057653	84	10°76
11	°6496507	°6431804	6	°7099096	°7149800	30	°3079873	°3101872	83	10°77
12	°6366643	°6301030	4	°7199991	°7249667	32	°3123648	°3145199	83	10°78
13	°6234970	°6168468	2	°7298824	°7347460	34	°3166525	°3187624	84	10°76
14	0°6101528	0°6034155	0	0°7395572	0°7443157	37	0°3208496	0°3229139	85	10°72
15	°5966353	°5898128	4	°7490213	°7536735	41	°3249551	°3269731	87	10°67
16	°5829483	°5760423	11	°7582722	°7628171	47	°3289678	°3309392	88	10°62
17	°5690953	°5621077	20	°7673079	°7717444	53	°3328871	°3348114	89	10°58
18	°5550800	°5480128	31	°7761262	°7804529	60	°3367120	°3385886	88	10°55
19	0°5409064	0°5337611	41	0°7847222	0°7889400	66	0°3404413	0°3422699	87	10°55

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
	+	+		+	+		+	+		23°27'
May 19	0°5265777	0°5193567	+ 51	0°7930999	0°7972038	- 71	0°3440743	0°3458544	+ 86	10°57
20	0°5120985	0°5048035	60	0°8012510	0°8052412	75	0°3476099	0°3493408	84	10°60
21	0°4974721	0°4901050	67	0°8091743	0°8130501	77	0°3510469	0°3527282	83	10°63
22	0°4827026	0°4752655	72	0°8168682	0°8206281	78	0°3543844	0°3560155	82	10°65
23	0°4677943	0°4602893	76	0°8243296	0°8279725	78	0°3576212	0°3592015	82	10°67
24	0°4527511	0°4451804	+ 80	0°8315566	0°8350814	- 79	0°3607562	0°3622853	+ 83	10°66
25	0°4375776	0°4299432	84	0°8385468	0°8419524	80	0°3637886	0°3652660	84	10°64
26	0°4222779	0°4145822	89	0°8452980	0°8485836	82	0°3667175	0°3681430	86	10°61
27	0°4068567	0°3991021	96	0°8518087	0°8549728	84	0°3695422	0°3709149	88	10°57
28	0°3913188	0°3835074	104	0°8580761	0°8611185	86	0°3722612	0°3735811	90	10°53
29	0°3756686	0°3678030	+ 114	0°8640995	0°8670187	- 89	0°3748745	0°3761411	+ 91	10°50
30	0°3599111	0°3519936	125	0°8698759	0°8726713	92	0°3773809	0°3785939	92	10°47
31	0°3440512	0°3360843	137	0°8754044	0°8780750	94	0°3797799	0°3809388	92	10°45
June 1	0°3280936	0°3200797	149	0°8806830	0°8832282	96	0°3820705	0°3831750	92	10°46
2	0°3120432	0°3039849	161	0°8857106	0°8881301	98	0°3845524	0°3853023	92	10°47
3	0°2959053	0°2878049	+ 172	0°8904863	0°8927790	- 97	0°3863248	0°3873199	+ 92	10°49
4	0°2796845	0°2715447	182	0°8950083	0°8971742	96	0°3882874	0°3892273	91	10°52
5	0°2633860	0°2552090	190	0°8992762	0°9013143	95	0°3901396	0°3910241	90	10°56
6	0°2470143	0°2388027	196	0°9032885	0°9051989	93	0°3918808	0°3927099	90	10°59
7	0°2305745	0°2223304	202	0°9070453	0°9088274	91	0°3935111	0°3942842	91	10°60
8	0°2140709	0°2057969	+ 206	0°9105453	0°9121989	- 89	0°3950294	0°3957468	+ 92	10°59
9	0°1975088	0°1892071	212	0°9137882	0°9153131	87	0°3964363	0°3970978	95	10°57
10	0°1808922	0°1725649	219	0°9167736	0°9181696	85	0°3977311	0°3983365	97	10°54
11	0°1642256	0°1558750	227	0°9195011	0°9207682	84	0°3989138	0°3994631	100	10°50
12	0°1475137	0°1391421	238	0°9219706	0°9231082	83	0°3999843	0°4004774	103	10°46
13	0°1307607	0°1223702	+ 251	0°9241810	0°9251892	- 81	0°4009424	0°4013795	+ 105	10°43
14	0°1139711	0°1055638	264	0°9261326	0°9270110	79	0°4017885	0°4021693	105	10°44
15	0°0971490	0°0887271	279	0°9282443	0°9285726	76	0°4025218	0°4028461	106	10°46
16	0°0802989	0°0718649	290	0°9292557	0°9298735	72	0°4031422	0°4034100	106	10°50
17	0°0634256	0°0549814	300	0°9304260	0°9309135	67	0°4036496	0°4038608	106	10°55
18	0°0465331	0°0380811	+ 307	0°9313356	0°9316921	- 62	0°4040437	0°4041982	+ 106	10°59
19	0°0296260	0°0211685	312	0°9319829	0°9322083	56	0°4043244	0°4044221	107	10°62
20	0°0127091	0°0042484	316	0°9323680	0°9324621	51	0°4044914	0°4045322	108	10°64
21	0°0042131	0°0126747	321	0°9324904	0°9324528	46	0°4045444	0°4045280	110	10°63
22	0°0211358	0°0295957	327	0°9323493	0°9321801	42	0°4044831	0°4044096	113	10°61
23	0°0380541	0°0465100	+ 334	0°9319449	0°9316440	- 37	0°4043076	0°4041771	+ 117	10°59
24	0°0549630	0°0634125	342	0°9312773	0°9308448	32	0°4040181	0°4038306	120	10°56
25	0°0718576	0°0802979	352	0°9303462	0°9297818	26	0°4036145	0°4033699	123	10°54
26	0°0887327	0°0971613	363	0°9291516	0°9284556	20	0°4030968	0°4027951	127	10°53
27	0°1055833	0°1139978	375	0°9276939	0°9268666	14	0°4024648	0°4021062	130	10°53
28	0°1224042	0°1308020	+ 386	0°9259737	0°9250153	- 6	0°4017192	0°4013037	+ 132	10°54
29	0°1391905	0°1475691	397	0°9239914	0°9229023	+ 2	0°4008599	0°4003878	134	10°56
30	0°1559371	0°1642938	408	0°9217479	0°9205282	11	0°3998874	0°3993588	135	10°60
July 1	0°1726387	0°1809713	417	0°9192435	0°9178941	20	0°3988019	0°3982168	136	10°65
2	0°1892906	0°1975963	423	0°9164798	0°9150006	29	0°3976035	0°3969622	137	10°70
3	0°2058877	0°2141641	+ 428	0°9134568	0°9118486	+ 37	0°3962928	0°3955953	+ 138	10°74

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
July 4	—	—		+	+		+	+		23°27'
5	0°2224250	0°2306699	+ 432	0°9101762	0°9084400	+ 45	0°3948699	0°3941168	+ 139	10°77
6	2388983	2471093	434	9066398	9047756	53	3933360	3925273	141	10°79
7	2553025	2634774	436	9028478	9008566	61	3916909	3908270	144	10°79
8	2716334	2797699	439	8988023	8966850	69	3899356	3890168	147	10°78
9	2878864	2959824	444	8945048	8922618	78	3880706	3870972	151	10°75
10	3040573	3121106	+ 451	8899561	8877583	+ 87	3860967	3850691	+ 155	10°73
11	3201418	3281504	460	8851585	8826669	97	3840146	3829333	159	10°72
12	3361358	3440976	469	8801135	8774984	108	3818252	3806904	164	10°72
13	3520352	3599481	479	8748219	8720844	120	3795289	3783410	167	10°75
14	3678357	3756976	487	8692858	8664262	133	3771266	3758858	169	10°80
15	3835332	3913421	+ 492	8635058	8605251	+ 145	3746186	3733252	+ 170	10°86
16	3991238	4068777	495	8574840	8543828	156	3720058	3706603	171	10°92
17	4146033	4222999	496	8512215	8480004	166	3692887	3678912	172	10°97
18	4299672	4376047	495	8447194	8413789	176	3664677	3650184	174	11°01
19	4452118	4527880	495	8379790	8345200	186	3635435	3620429	177	11°03
20	4603326	4678450	+ 495	8310021	8274254	+ 196	3605168	3589652	+ 181	11°03
21	4753248	4827715	496	8237901	8200966	206	3573882	3557859	185	11°03
22	4901845	4975631	497	8163449	8125353	216	3541583	3525057	189	11°02
23	5049069	5122155	500	8086680	8047433	228	3508282	3491257	193	11°00
24	5194880	5267239	504	8007614	7967226	241	3473985	3456465	198	10°99
25	5339227	5410838	+ 509	7926272	7884754	+ 255	3438700	3420692	+ 203	11°00
26	5482067	5552910	513	7842677	7800043	269	3402441	3383949	207	11°03
27	5623359	5693410	517	7756854	7713115	284	3365218	3346246	210	11°07
28	5763057	5832292	519	7668828	7623995	298	3327036	3307590	213	11°12
29	5901111	5969512	519	7578619	7532707	312	3287908	3267993	216	11°17
30	6037489	6105035	+ 519	7486260	7439281	+ 325	3247846	3227468	+ 218	11°23
31	6172145	6238814	517	7391774	7343743	337	3206861	3186026	220	11°28
Aug. 1	6305038	6370812	513	7295192	7246126	347	3164965	3143680	221	11°33
2	6436130	6500989	508	7196547	7146456	358	3122171	3100440	223	11°36
3	6565384	6629308	503	7095861	7044764	368	3078490	3056322	226	11°37
4	6692758	6755730	+ 498	6993169	6941078	+ 377	3033393	3011337	+ 230	11°37
5	6818221	6880227	495	6888499	6835435	388	2988524	2965500	234	11°36
6	6941743	7002762	493	6781889	6727865	400	2942267	2918827	239	11°35
7	7063282	7123301	492	6673366	6618397	414	2895180	2871328	244	11°34
8	7182813	7241814	492	6562963	6507067	430	2847273	2823021	249	11°35
9	7300301	7358272	+ 491	6450714	6393906	+ 446	2798571	2773922	+ 254	11°37
10	7415721	7472643	490	6336647	6278943	461	2749078	2724041	258	11°42
11	7529035	7584896	487	6220797	6162211	476	2698812	2673393	261	11°48
12	7640219	7695000	482	6103190	6043737	489	2647786	2621992	263	11°55
13	7749236	7802927	475	5983857	5923551	500	2596012	2569849	264	11°61
14	7856067	7908651	+ 467	5862827	5801686	+ 509	2543503	2516977	+ 266	11°66
15	7960675	8012137	458	5740133	5678169	518	2490272	2463390	268	11°69
16	8063032	8113356	449	5615800	5553027	527	2436332	2409099	271	11°70
17	8163104	8212273	441	5489856	5426291	537	2381693	2354117	274	11°69
18	8260860	8308862	434	5362336	5297996	548	2326372	2298460	278	11°68
19	8356273	8403089	+ 427	5233274	5168176	+ 559	2270384	2242144	+ 282	11°67

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity.
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.
	—	—	+	+	+	+	+	+	+	23°27'
Aug. 19	0°8449307	0°8494922	+ 421	0°5102705	0°5036866	+ 572	0°2213742	0°2185181	+ 287	11°67
20	0°8539930	0°8584328	415	0°4970663	0°4904101	586	0°2156463	0°2127588	292	11°68
21	0°8628112	0°8671279	409	0°4837184	0°4769917	600	0°2098561	0°2069381	297	11°70
22	0°8713824	0°8755745	402	0°4702305	0°4634355	614	0°2040052	0°2010575	301	11°74
23	0°8797037	0°8837696	394	0°4566069	0°4497453	628	0°1980954	0°1951190	304	11°78
24	0°8877720	0°8917106	+ 386	0°4428512	0°4359251	+ 641	0°1921283	0°1891238	+ 307	11°83
25	0°8955850	0°8993948	377	0°4289675	0°4219790	653	0°1861056	0°1830740	310	11°89
26	0°9031396	0°9068193	366	0°4149600	0°4079111	662	0°1800292	0°1769712	312	11°95
27	0°9104334	0°9139818	354	0°4008328	0°3937258	670	0°1739005	0°1708173	313	12°00
28	0°9174641	0°9208799	348	0°3865905	0°3794272	676	0°1677218	0°1646142	314	12°03
29	0°9242290	0°9275114	+ 330	0°3722368	0°3650197	+ 681	0°1614947	0°1583635	+ 316	12°04
30	0°9307267	0°9338746	318	0°3577765	0°3505076	688	0°1552210	0°1520672	318	12°03
31	0°9369549	0°9399673	306	0°3432137	0°3358953	696	0°1489026	0°1457273	322	12°01
Sept. 1	0°9429117	0°9457879	295	0°3285529	0°3211871	705	0°1425417	0°1393458	324	11°99
2	0°9485956	0°9513347	284	0°3137984	0°3063874	716	0°1361399	0°1329243	328	11°98
3	0°9540049	0°9566062	+ 274	0°2989547	0°2915007	+ 729	0°1296994	0°1264652	+ 333	11°98
4	0°9591383	0°9616013	263	0°2840260	0°2765315	742	0°1232220	0°1199701	338	11°99
5	0°9639948	0°9663187	251	0°2690174	0°2614841	754	0°1167098	0°1134413	342	12°02
6	0°9685728	0°9707569	239	0°2539323	0°2463626	765	0°1101648	0°1068805	345	12°08
7	0°9728711	0°9749155	227	0°2387754	0°2311711	774	0°1035886	0°1002893	347	12°14
8	0°9768896	0°9787932	+ 214	0°2235503	0°2159138	+ 781	0°0969828	0°0936695	+ 348	12°19
9	0°9806262	0°9823886	199	0°2082618	0°2005947	785	0°0903496	0°0870232	349	12°23
10	0°9840800	0°9857002	184	0°1929130	0°1852174	787	0°0836904	0°0803516	349	12°26
11	0°9872492	0°9887270	169	0°1775082	0°1697860	790	0°0770071	0°0736569	350	12°26
12	0°9901333	0°9914680	155	0°1620513	0°1543045	794	0°0703013	0°0669405	351	12°25
13	0°9927310	0°9939221	+ 141	0°1465464	0°1387772	+ 799	0°0635749	0°0602045	+ 353	12°23
14	0°9950411	0°9960878	127	0°1309976	0°1232082	806	0°0568296	0°0534504	355	12°21
15	0°9970620	0°9979638	112	0°1154095	0°1076020	814	0°0500672	0°0466802	358	12°19
16	0°9987930	0°9995495	98	0°0997863	0°0919630	822	0°0432897	0°0398958	361	12°18
17	1°0002332	1°0008438	83	0°0841326	0°0762957	831	0°0364989	0°0330992	365	12°18
18	1°0013812	1°0018454	+ 68	0°0684529	0°0606048	+ 840	0°0296970	0°0262924	+ 368	12°20
19	0°0022362	0°0025535	53	0°0527519	0°0448949	849	0°0228857	0°0194772	370	12°23
20	0°0027973	0°0029675	37	0°0370342	0°0291706	856	0°0160673	0°0126561	372	12°27
21	0°0030641	0°0030870	21	0°0213047	0°0134370	861	0°0092437	0°0058306	374	12°32
22	0°0030361	0°0029113	+ 5	0°0055682	0°0023012	864	0°0024170	0°0009969	375	12°36
23	1°0027127	1°0024399	— 11	0°0101705	0°0180391	+ 865	0°0044109	0°0078245	+ 375	12°39
24	0°0020930	0°0016722	27	0°0259065	0°0337720	865	0°0112376	0°0146500	375	12°41
25	1°0011775	1°0006089	43	0°0416350	0°0494949	865	0°0180614	0°0214714	374	12°42
26	0°9999663	0°9992497	59	0°0573510	0°0652028	865	0°0248797	0°0282863	373	12°41
27	0°9984592	0°9975948	75	0°0730498	0°0808910	865	0°0316908	0°0350929	373	12°38
28	0°9966565	0°9956444	— 92	0°0887260	0°0965522	+ 868	0°0384923	0°0418888	+ 374	12°33
29	0°9945588	0°9933998	109	0°1043750	0°1121879	872	0°0452821	0°0486720	375	12°30
30	0°9921673	0°9908613	126	0°1199922	0°1277872	878	0°0520581	0°0554403	376	12°28
Oct. 1	0°9894820	0°9880296	144	0°1355723	0°1433469	884	0°0588183	0°0621917	378	12°27
2	0°9865043	0°9849062	162	0°1511106	0°1588628	890	0°0655602	0°0689238	380	12°29
3	0°9832354	0°9814922	— 180	0°1666027	0°1743298	+ 894	0°0722221	0°0756348	+ 382	12°32

Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.		
Oct. 4	0° 9796765	—	— 198	0° 1820436	—	+ 896	0° 0789817	—	+ 383	23° 27'
5	° 9758282	0° 9777884	215	° 1974293	0° 1897436	896	° 0856574	0° 0823227	383	12° 36
6	° 9716922	° 9737961	232	° 2127556	° 2051001	894	° 0923069	° 0889855	382	12° 40
7	° 9672693	° 9695165	249	° 2280180	° 2203950	890	° 0989287	° 0956214	382	12° 43
8	° 9625611	° 9649508	265	° 2432129	° 2356242	886	° 1055209	° 1022286	380	12° 44
9	° 9575681	° 9601001	282	° 2583357	° 2507835	882	° 1120817	° 1088054	377	12° 43
10	° 9522917	° 9549653	300	° 2733821	° 2658687	882	° 1186093	° 1153498	+ 375	12° 41
11	° 9467327	° 9495474	318	° 2883482	° 2808754	881	° 1251018	° 1218601	374	12° 37
12	° 9408929	° 9438479	336	° 3032297	° 2957998	881	° 1315576	° 1283344	373	12° 33
13	° 9347729	° 9378678	354	° 3180221	° 3106373	881	° 1379745	° 1347710	371	12° 29
14	° 9283741	° 9316083	374	° 3327207	° 3253834	882	° 1443509	° 1411679	370	12° 26
15	° 9216979	° 9250706	394	° 3473218	° 3400337	885	° 1506849	° 1475234	+ 370	12° 24
16	° 9147462	° 9182564	414	° 3618200	° 3545840	886	° 1569743	° 1538353	371	12° 24
17	° 9075199	° 9111672	433	° 3762112	° 3690293	885	° 1632173	° 1601018	371	12° 25
18	° 9000213	° 9038045	452	° 3904906	° 3833651	883	° 1694120	° 1663208	370	12° 27
19	° 8922520	° 8961704	471	° 4046542	° 3975872	879	° 1755562	° 1724905	369	12° 29
20	° 8842134	° 8882662	489	° 4186965	° 41116907	874	° 1816482	° 1786088	+ 368	12° 32
21	° 8759078	° 8800938	506	° 4326137	° 4256710	867	° 1876860	° 1846740	366	12° 34
22	° 8673374	° 8716555	522	° 4464012	° 4395239	859	° 1936674	° 1906839	363	12° 36
23	° 8585046	° 8629538	539	° 4600542	° 4532448	852	° 1995907	° 1966364	359	12° 36
24	° 8494112	° 8539903	556	° 4735683	° 4668289	846	° 2054539	° 2025300	355	12° 33
25	° 8400604	° 8447678	574	° 4869390	° 4802719	841	° 2112550	° 2083623	+ 351	12° 29
26	° 8304550	° 8352894	594	° 5001618	° 4935692	837	° 2169920	° 2141316	346	12° 24
27	° 8205975	° 8255575	614	° 5132325	° 5067165	835	° 2226631	° 2198359	343	12° 19
28	° 8104918	° 8155755	635	° 5261465	° 5197094	834	° 2282665	° 2254734	340	12° 15
29	° 8001408	° 8053467	657	° 5388999	° 5325436	831	° 2338001	° 2304211	338	12° 13
30	° 7895482	° 7948745	678	° 5514881	° 5452148	827	° 2392622	° 2365402	+ 336	12° 12
31	° 7787171	° 7841622	699	° 5639081	° 5577194	821	° 2446512	° 2419660	335	12° 13
Nov. 1	° 7676515	° 7732134	717	° 5761556	° 5700536	813	° 2499653	° 2473177	333	12° 16
2	° 7563547	° 7620318	735	° 5882274	° 5822137	803	° 2552032	° 2525939	329	12° 19
3	° 7448297	° 7506205	751	° 6001199	° 5941963	793	° 2603629	° 2577929	325	12° 21
4	° 7330804	° 7389829	767	° 6118302	° 6059980	783	° 2654434	° 2629132	+ 321	12° 21
5	° 7211100	° 7271227	783	° 6233546	° 6176158	772	° 2704430	° 2679534	316	12° 20
6	° 7089214	° 7150427	800	° 6346902	° 6290462	762	° 2753605	° 2729121	310	12° 18
7	° 6965182	° 7027464	818	° 6458331	° 6402859	754	° 2801942	° 2777879	303	12° 14
8	° 6839041	° 6902373	838	° 6567807	° 6513316	746	° 2849431	° 2825794	297	12° 08
9	° 6710822	° 6775189	858	° 6675292	° 6621801	738	° 2896056	° 2872852	+ 291	12° 03
10	° 6580558	° 6645943	879	° 6780753	° 6728278	730	° 2941804	° 2919041	286	12° 00
11	° 6448289	° 6514672	901	° 6884159	° 6832715	722	° 2986659	° 2964345	282	11° 57
12	° 6314048	° 6381413	922	° 6985473	° 6935079	714	° 3030607	° 3008747	277	11° 55
13	° 6177782	° 6246199	942	° 7084665	° 7035336	705	° 3073635	° 3052237	273	11° 56
14	° 6039802	° 6109071	962	° 7181703	° 7133456	694	° 3115730	° 3094800	+ 269	11° 57
15	° 5899876	° 5970069	980	° 7276549	° 7229401	682	° 3156874	° 3136422	265	11° 59
16	° 5758132	° 5829229	998	° 7369177	° 7323142	669	° 3197056	° 3177086	260	12° 01
17	° 5614611	° 5686592	1014	° 7459553	° 7414648	655	° 3236263	° 3216783	255	12° 03
18	° 5469353	° 5542197	1028	° 7547639	° 7503884	640	° 3274477	° 3255495	250	12° 04
	° 5396085	—	— 1028	° 7590814	—	—	° 3293208	—	+ 243	12° 05

SUN'S CO-ORDINATES, &c., 1889.

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Mean Time.	X, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Y, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Z, True Eq ^d of Date.		Red. to M. Eq ^d of Jan. 1.	Apparent Obliquity
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.
	—	—	—	—	—	—	—	—	—	23° 27'
Nov. 19	0° 5322399	0° 5248299	-1042	0° 7633407	0° 7675416	+ 625	0° 3311686	—	+ 235	12° 03
20	5173792	5098884	1057	7716834	7757657	611	3347881	0° 3329912	227	12° 00
21	5023580	4947885	1073	7797883	7837508	597	3383045	3365592	218	11° 59
22	4871806	4795349	1091	7876527	7914936	584	3417166	3400237	209	11° 59
23	4718521	4641328	1110	7952734	7989915	572	3450232	3433831	201	11° 58
24	4563776	4485871	-1131	8026476	8062416	+ 559	3482230	0° 3497826	+ 194	11° 52
25	4407621	4329032	1153	8097730	8132417	546	3513151	3528204	188	11° 51
26	4250110	4170864	1173	8166472	8199890	532	3542982	3557484	182	11° 52
27	4091298	4011419	1192	8236273	8264820	516	3571710	3585661	177	11° 54
28	3931235	3850752	1209	8296326	8327189	499	3599334	3612727	171	11° 57
29	3769976	3688913	-1224	8357408	8386981	+ 481	3625839	0° 3638670	+ 164	11° 50
30	3607570	3525952	1236	8415904	8444176	462	3651220	3663487	156	11° 52
Dec. 1	3444066	3361917	1248	8471795	8498761	443	3675471	3687169	148	11° 53
2	3279513	3196860	1259	8525070	8550721	424	3698582	3709709	139	11° 51
3	3113963	3030829	1272	8575713	8600043	406	3720549	3731101	129	11° 58
4	2947463	2863871	-1286	8623711	8646715	+ 388	3741366	0° 3751343	+ 119	11° 54
5	2780059	2696034	1301	8669052	8690721	370	3761030	3770428	109	11° 50
6	2611802	2527371	1317	8711720	8732047	352	3779535	3788350	99	11° 57
7	2442745	2357928	1334	8751701	8770680	334	3796873	3805104	90	11° 54
8	2272929	2187756	1352	8788984	8806609	315	3813041	3820684	81	11° 53
9	2102413	2016905	-1369	8823554	8839820	+ 295	3828033	0° 3835086	+ 72	11° 54
10	1931240	1845424	1385	8855403	8870302	274	3841845	3848307	64	11° 56
11	1759464	1673366	1400	8884515	8898044	253	3854472	3860338	56	11° 59
12	1587136	1500781	1414	8910885	8923036	231	3865907	3871177	48	11° 52
13	1414306	1327718	1425	8934496	8945264	208	3876148	3880820	40	11° 56
14	1241023	1154230	-1434	8955338	8964718	+ 185	3885190	0° 3889258	+ 32	11° 59
15	1067343	0980370	1442	8973404	8981394	162	3893025	3896491	23	11° 50
16	0893317	0806190	1450	8988686	8995279	139	3899654	3902515	13	11° 51
17	0718996	0631742	1456	9001173	9006365	115	3905073	3907326	+ 3	11° 50
18	0544434	0457080	1463	9010856	9014647	92	3909275	3910921	- 8	11° 57
19	0369687	0282261	-1472	9017734	9020116	+ 69	3912261	0° 3913296	- 21	11° 54
20	0194809	0107339	1483	9021792	9022763	46	3914025	3914449	33	11° 50
21	0019860	0006762	1495	9023028	9022587	+ 23	3914567	3914379	44	11° 58
22	0155101	0242567	1508	9021440	9019587	- 2	3913885	3913085	55	11° 57
23	0330013	0417433	1520	9017028	9013765	28	3911980	3910569	65	11° 59
24	0504818	0592160	-1531	9009797	9000512	- 54	3908852	0° 3906829	- 74	11° 53
25	0679453	0766689	1539	8999746	8993666	80	3904501	3901867	83	11° 58
26	0853862	0940964	1544	8986883	8979398	107	3898928	3895683	92	11° 59
27	1027988	1114927	1548	8971214	8962331	134	3892135	3888282	101	11° 57
28	1201774	1288525	1549	8952751	8942477	160	3884127	3879670	111	12° 00
29	1375170	1461705	-1550	8931507	8919842	- 186	3874912	0° 3869851	- 122	12° 01
30	1548123	1634417	1550	8907484	8894433	212	3864488	3858824	133	12° 00
31	1720580	1806607	1552	8880691	8866257	238	3852859	3846594	145	11° 58
32	1892489	—	-1555	8851133	—	- 264	3840030	—	- 157	11° 56

MEAN TIME.

Month and Day.	Apparent Right Ascension.		Apparent Declination.		Log. of True Dist. from the Earth.		Meridian Passage.	Helio- centric Longitude.		Helio- centric Latitude.		Log. of Rad. Vect.
	Noon.		Noon.		Noon.			Noon.		Noon.		
Jan. 1	h m s	° ' "	° ' "	° ' "	° ' "	° ' "	h m	° ' "	° ' "	° ' "	° ' "	
2	18 59 37.28	S. 24 41 0.8	0° 15 45 182	0 14.4	288 22 55.2	8. 6 9 13.4	0 14.4	288 22 55.2	8. 6 9 13.4	9° 65 14 306		
3	19 6 45.58	24 33 5.1	° 15 30 424	0 17.6	291 24 17.9	6 19 15.4	0 17.6	291 24 17.9	6 19 15.4	° 64 8 24 37		
4	19 13 34.33	24 23 37.5	° 15 13 663	0 20.8	294 28 35.1	6 28 22.5	0 20.8	294 28 35.1	6 28 22.5	° 64 47 88 1		
5	19 21 3.34	24 12 37.1	° 14 9 830	0 24.0	297 36 3.0	6 36 30.5	0 24.0	297 36 3.0	6 36 30.5	° 64 10 6 35		
6	19 28 12.42	24 0 3.5	° 14 73 842	0 27.2	300 46 58.5	6 43 35.2	0 27.2	300 46 58.5	6 43 35.2	° 63 70 70 6		
7	19 35 21.36	23 45 55.8	° 14 50 629	0 30.4	304 1 39.1	6 49 31.9	0 30.4	304 1 39.1	6 49 31.9	° 63 28 09 9		
8	19 42 29.95	S. 23 30 13.6	0° 14 25 084	0 33.6	307 20 22.9	8. 6 54 15.4	0 33.6	307 20 22.9	8. 6 54 15.4	9° 62 8 28 29		
9	19 49 37.95	23 12 56.6	° 13 97 100	0 36.8	310 43 28.7	6 57 40.1	0 36.8	310 43 28.7	6 57 40.1	° 62 34 92 8		
10	19 56 45.07	22 54 4.8	° 13 66 568	0 40.0	314 11 16.2	6 59 39.9	0 40.0	314 11 16.2	6 59 39.9	° 61 8 44 29		
11	20 3 51.04	22 33 37.9	° 13 33 356	0 43.2	317 44 5.9	7 0 8.2	0 43.2	317 44 5.9	7 0 8.2	° 61 31 38 7		
12	20 10 55.52	22 11 36.3	° 12 97 328	0 46.3	321 22 18.4	6 58 57.9	0 46.3	321 22 18.4	6 58 57.9	° 60 75 87 1		
13	20 17 58.15	21 48 0.7	° 12 58 337	0 49.4	325 6 15.5	6 56 1.5	0 49.4	325 6 15.5	6 56 1.5	° 60 17 97 9		
14	20 24 58.53	S. 21 22 51.8	0° 12 16 210	0 52.5	328 56 19.2	8. 6 51 11.1	0 52.5	328 56 19.2	8. 6 51 11.1	9° 59 57 8 20		
15	20 31 56.21	20 56 11.0	° 11 70 781	0 55.5	332 52 51.7	6 44 18.2	0 55.5	332 52 51.7	6 44 18.2	° 58 95 55 2		
16	20 38 50.65	20 27 59.9	° 11 21 860	0 58.5	336 56 15.9	6 35 14.4	0 58.5	336 56 15.9	6 35 14.4	° 58 31 35 7		
17	20 45 41.29	19 58 21.1	° 10 69 249	1 1.4	341 6 53.8	6 23 51.0	1 1.4	341 6 53.8	6 23 51.0	° 57 65 46 1		
18	20 52 27.45	19 27 16.9	° 10 12 724	1 4.2	345 25 7.7	6 9 59.4	1 4.2	345 25 7.7	6 9 59.4	° 56 98 13 5		
19	20 59 8.38	18 54 51.4	° 09 52 076	1 6.9	349 51 18.6	5 53 31.3	1 6.9	349 51 18.6	5 53 31.3	° 56 29 71 0		
20	21 5 43.23	S. 18 21 9.0	0° 08 87 073	1 9.6	354 25 46.2	8. 5 34 19.2	1 9.6	354 25 46.2	8. 5 34 19.2	9° 55 60 57 0		
21	21 12 11.00	17 46 15.1	° 08 17 481	1 12.2	359 8 48.0	5 12 16.7	1 12.2	359 8 48.0	5 12 16.7	° 54 91 16 6		
22	21 18 30.59	17 10 16.9	° 07 43 073	1 14.5	4 0 38.9	4 47 19.2	1 14.5	4 0 38.9	4 47 19.2	° 54 22 01 8		
23	21 24 40.74	16 33 21.8	° 06 63 616	1 16.7	9 1 30.1	4 19 24.2	1 16.7	9 1 30.1	4 19 24.2	° 53 53 72 2		
24	21 30 40.01	15 55 39.6	° 05 78 906	1 18.7	14 11 27.9	3 48 32.1	1 18.7	14 11 27.9	3 48 32.1	° 52 86 94 7		
25	21 36 26.82	15 17 21.3	° 04 88 762	1 20.5	19 30 33.2	3 14 47.3	1 20.5	19 30 33.2	3 14 47.3	° 52 22 43 0		
26	21 41 59.34	S. 14 38 40.0	0° 03 93 040	1 22.1	24 58 39.9	8. 2 38 18.1	1 22.1	24 58 39.9	8. 2 38 18.1	9° 51 60 96 2		
27	21 47 15.62	13 59 50.7	° 02 91 642	1 23.5	30 35 33.8	1 59 18.5	1 23.5	30 35 33.8	1 59 18.5	° 51 03 39 3		
28	21 52 13.47	13 21 10.3	° 01 84 549	1 24.5	36 20 51.8	1 18 7.4	1 24.5	36 20 51.8	1 18 7.4	° 50 50 60 1		
29	21 56 50.52	12 42 57.9	° 00 71 843	1 25.1	42 14 1.0	8. 0 35 10.1	1 25.1	42 14 1.0	8. 0 35 10.1	° 50 03 45 9		
30	22 1 4.28	12 5 34.8	9° 99 53 699	1 25.4	48 14 17.9	N. 0 9 2.6	1 25.4	48 14 17.9	N. 0 9 2.6	° 49 62 81 0		
31	22 4 52.12	11 29 23.9	° 98 30 441	1 25.2	54 20 48.4	0 53 54.7	1 25.2	54 20 48.4	0 53 54.7	° 49 29 44 7		
Feb. 1	22 8 11.34	S. 10 54 50.0	9° 97 02 545	1 24.5	60 32 28.1	N. 1 38 45.9	1 24.5	60 32 28.1	N. 1 38 45.9	9° 49 04 04 5		
2	22 10 59.28	10 22 19.0	° 95 70 678	1 23.3	66 48 3.2	2 22 53.2	1 23.3	66 48 3.2	2 22 53.2	° 48 87 14 3		
3	22 13 13.41	9 52 17.5	° 94 35 690	1 21.6	73 6 11.8	3 5 32.5	1 21.6	73 6 11.8	3 5 32.5	° 48 79 11 9		
4	22 14 51.38	9 25 12.1	° 92 98 651	1 19.3	79 25 26.8	3 46 1.1	1 19.3	79 25 26.8	3 46 1.1	° 48 80 14 9		
5	22 15 51.25	9 1 28.5	° 91 60 837	1 16.3	85 44 17.5	4 23 39.6	1 16.3	85 44 17.5	4 23 39.6	° 48 90 21 6		
6	22 16 11.58	8 41 30.8	° 90 23 718	1 12.7	92 1 13.4	4 57 53.5	1 12.7	92 1 13.4	4 57 53.5	° 49 09 08 5		
7	22 15 51.61	S. 8 25 39.8	9° 88 88 990	1 8.4	98 14 46.3	N. 5 28 15.2	1 8.4	98 14 46.3	N. 5 28 15.2	9° 49 36 35 1		
8	22 14 51.34	8 14 12.2	° 87 58 439	1 3.4	104 23 34.0	5 54 24.6	1 3.4	104 23 34.0	5 54 24.6	° 49 71 43 5		
9	22 13 11.79	8 7 19.9	° 86 33 989	0 57.8	110 26 22.2	6 16 9.7	0 57.8	110 26 22.2	6 16 9.7	° 50 13 63 0		
10	22 10 54.98	8 5 7.6	° 85 17 584	0 51.6	116 22 6.4	6 33 26.1	0 51.6	116 22 6.4	6 33 26.1	° 50 62 13 2		
11	22 8 4.05	8 7 33.4	° 84 11 111	0 44.8	122 9 53.2	6 46 16.5	0 44.8	122 9 53.2	6 46 16.5	° 51 16 08 8		
12	22 4 43.18	8 14 27.5	° 83 16 325	0 37.5	127 49 0.9	6 54 49.4	0 37.5	127 49 0.9	6 54 49.4	° 51 74 61 9		
13	22 0 57.57	S. 8 25 32.3	9° 82 34 732	0 29.9	133 18 59.0	N. 6 59 18.3	0 29.9	133 18 59.0	N. 6 59 18.3	9° 52 36 85 0		
14	21 56 53.20	8 40 23.1	° 81 67 530	0 21.9	138 39 28.2	6 59 59.9	0 21.9	138 39 28.2	6 59 59.9	° 53 01 95 0		
15	21 52 36.61	8 58 29.0	° 81 15 522	0 13.8	143 50 18.5	6 57 13.2	0 13.8	143 50 18.5	6 57 13.2	° 53 69 13 3		
16	21 48 14.60	9 19 14.7	° 80 79 086	{ 11 53.3 }	148 51 28.9	6 51 18.4	{ 11 53.3 }	148 51 28.9	6 51 18.4	° 54 37 68 0		
17	21 43 53.85	S. 9 42 2.2	9° 80 58 161	23 49.2	153 43 5.6	N. 6 42 35.9	23 49.2	153 43 5.6	N. 6 42 35.9	9° 55 06 93 5		

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Feb. 16	h m s	° ' "	9° 8058161	h m	° ' "	° ' "	9° 5506935
17	21 43 53.85	S. 9 42 2.2	8052285	23 49.2	153 43 5.6	N. 6 42 35.9	5576323
18	21 39 40.73	10 6 13.1	8060628	23 41.2	158 25 20.7	6 31 25.9	5645338
19	21 35 40.93	10 31 10.6	8082087	23 33.6	162 58 30.9	6 18 7.4	5713546
20	21 31 59.34	10 56 20.1	8115359	23 26.4	167 22 56.6	6 2 58.3	5780574
21	21 28 39.92	11 21 11.2	8159031	23 19.6	171 39 0.6	5 46 15.2	5846108
22	21 25 45.63	11 45 18.4	8211647	23 13.2	175 47 7.4	5 28 12.9	5909883
23	21 23 18.59	S. 12 8 20.2	8271790	23 7.3	179 47 42.2	N. 5 9 5.0	5971686
24	21 21 19.98	12 29 59.9	8338111	23 1.8	183 41 11.1	4 49 3.5	6031344
25	21 19 50.33	12 50 4.9	8409368	22 56.9	187 28 0.0	4 28 18.6	6088706
26	21 18 49.53	13 8 26.0	8484444	22 52.4	191 8 34.3	4 7 0.0	6143665
27	21 18 17.02	13 24 56.8	8562357	22 48.4	194 43 19.0	3 45 15.5	6196135
28	21 18 11.85	13 39 33.4	8642252	22 44.8	198 12 38.3	3 23 12.2	6246051
Mar. 1	21 18 32.87	S. 13 52 13.8	8723409	22 41.6	201 36 55.6	N. 3 0 56.3	6293355
2	21 19 18.74	14 2 57.1	8805212	22 38.8	204 56 33.2	2 38 32.9	6338021
3	21 20 28.02	14 11 43.6	8887161	22 36.3	208 11 52.9	2 16 6.7	6419344
4	21 21 59.25	14 18 34.4	8968833	22 34.2	211 23 14.9	1 53 41.5	6465597
5	21 23 50.96	14 23 31.0	9043089	22 32.4	214 30 59.2	1 31 20.6	6548992
6	21 26 1.75	14 26 35.2	9130083	22 31.0	217 35 24.3	1 9 7.1	6621181
7	21 28 30.21	S. 14 27 49.0	9287025	22 29.8	220 36 48.2	N. 0 47 3.5	6654976
8	21 31 15.05	14 27 14.6	9363492	22 28.8	223 35 27.9	0 25 11.9	6675671
9	21 34 15.03	14 24 54.3	9438506	22 28.1	226 31 40.0	N. 0 3 34.2	6683027
10	21 37 29.01	14 20 50.2	9512002	22 27.6	229 25 40.1	S. 0 17 47.9	6687892
11	21 40 55.91	14 15 4.4	9583920	22 27.3	232 17 43.4	0 38 52.8	6690157
12	21 44 34.75	14 7 39.0	9654246	22 27.1	235 8 4.3	0 59 39.3	6686884
13	21 48 24.61	S. 13 58 36.2	9722984	22 27.2	237 56 56.9	S. 1 20 6.2	6681344
14	21 52 24.66	13 47 57.7	9790129	22 27.4	240 44 35.2	1 40 12.2	6673200
15	21 56 34.16	13 35 45.2	9855694	22 27.7	243 31 12.1	1 59 56.3	6662444
16	22 0 52.38	13 22 0.9	9919701	22 28.2	246 17 0.6	2 19 17.5	6649070
17	22 5 18.72	13 6 46.0	9982164	22 28.8	249 2 13.5	2 38 14.7	6633070
18	22 9 52.62	12 50 2.4	00043113	22 29.6	251 47 3.2	2 56 46.8	6614435
19	22 14 33.53	S. 12 31 51.4	0102573	22 30.4	254 31 42.1	S. 3 14 52.8	6593157
20	22 19 21.03	12 12 14.6	0160574	22 31.4	257 16 22.5	3 32 31.6	6579221
21	22 24 14.68	11 51 13.4	0217147	22 32.5	260 1 16.5	3 49 42.0	6569221
22	22 29 14.14	11 28 48.9	0272312	22 33.6	262 46 36.4	4 6 22.6	6542621
23	22 34 19.07	11 5 2.7	0326103	22 34.8	265 32 34.4	4 22 32.2	6521397
24	22 39 29.18	10 39 55.9	0378538	22 36.1	268 19 22.9	4 58 9.1	6509427
25	22 44 44.23	S. 10 13 29.6	0429649	22 37.5	271 7 14.5	S. 4 53 11.8	6481397
26	22 50 4.00	9 45 45.1	0479449	22 38.9	273 56 21.7	5 7 38.4	6466758
27	22 55 28.30	9 16 43.8	0527957	22 40.4	276 46 58.1	5 21 27.0	6446758
28	23 0 56.98	8 46 26.5	0575187	22 42.0	279 39 16.4	5 34 35.3	6426211
29	23 6 29.91	8 14 54.5	0621144	22 43.7	282 33 30.4	5 47 0.9	6409427
30	23 12 7.02	7 42 8.7	0665840	22 45.4	285 29 54.4	5 58 41.2	6394121
31	23 17 48.22	S. 7 8 10.4	0709273	22 47.2	288 28 42.7	S. 6 9 33.1	6373200
Apr. 1	23 23 33.49	6 33 0.4	0751431	22 49.1	291 30 10.5	6 19 33.5	6351344
2	23 29 22.81	5 56 40.2	0792308	22 51.1	294 34 33.4	6 28 38.7	6330700
3	23 35 16.20	5 19 10.5		22 53.1	297 42 7.5	6 36 44.8	6309427
4	23 41 13.68	S. 4 40 32.7		22 55.2	300 53 9.7	S. 6 43 47.5	6288706

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Apr. 3	^{h m s} 23 41 13.68	^{° ′ ″} S. 4 40 32.7	0.0792308	^{h m} 22 55.2	^{° ′ ″} 300 53 9.7	^{° ′ ″} 8.6 43 47.5	9.6369412
4	23 47 15.32	4 047.8	0.0831888	22 57.3	304 7 57.6	6 49 41.9	6326722
5	23 53 21.18	3 19 57.1	0.0870141	22 59.6	307 26 49.2	6 54 23.1	6281371
6	23 59 31.38	2 38 2.0	0.0907034	23 1.9	310 50 3.5	6 57 45.2	6233388
7	0 5 46.02	1 55 3.7	0.0942531	23 4.3	314 18 0.1	6 59 42.2	6182811
8	0 12 5.25	1 11 3.8	0.0976579	23 6.7	317 50 59.4	7 0 7.5	6129690
9	0 18 29.23	S. 0 26 3.9	0.1009114	23 9.3	321 29 22.3	8.6 58 54.0	9.6074097
10	0 24 58.10	N. 0 19 54.2	0.1040071	23 11.9	325 13 30.4	6 55 54.2	6016132
11	0 31 32.06	1 6 48.5	0.1069363	23 14.6	329 3 45.8	6 51 0.0	5955907
12	0 38 11.30	1 54 36.7	0.1096895	23 17.4	333 0 30.9	6 44 3.2	5893576
13	0 44 56.02	2 43 16.5	0.1122569	23 20.3	337 4 8.1	6 34 55.2	5829324
14	0 51 46.43	3 32 44.7	0.1146255	23 23.3	341 15 0.0	6 23 27.3	5763380
15	0 58 42.72	N. 4 22 58.4	0.1167818	23 26.4	345 33 28.4	8.6 9 30.8	9.5696016
16	1 5 45.10	5 13 53.7	0.1187112	23 29.6	349 59 54.4	5 52 57.7	5627563
17	1 12 53.77	6 5 26.6	0.1203968	23 32.9	354 34 37.7	5 33 40.4	5558408
18	1 20 8.85	6 57 32.1	0.1218207	23 36.3	359 17 55.9	5 11 32.5	5489004
19	1 27 30.53	7 50 4.9	0.1229632	23 39.8	4 10 3.5	4 46 29.5	5419874
20	1 34 58.83	8 42 58.6	0.1238041	23 43.5	9 11 11.6	4 18 28.9	5351618
21	1 42 33.83	N. 9 36 6.4	0.1243213	23 47.3	14 21 26.5	S. 3 47 31.3	9.5284903
22	1 50 15.49	10 29 20.5	0.1244921	23 51.2	19 40 48.7	3 13 41.2	5220468
23	1 58 3.68	11 22 32.0	0.1242934	23 55.2	25 9 12.0	2 37 7.1	5159112
24	2 5 58.21	12 15 31.3	0.1237021	23 59.2	30 46 21.9	1 58 3.0	5101680
25	2 13 58.78	13 8 8.2	0.1226959	*	36 31 55.1	1 16 48.3	5049050
26	2 22 4.93	14 0 11.3	0.1212532	0 3.4	42 25 18.2	8.0 33 48.1	5002100
27	2 30 16.13	N. 14 51 28.7	0.1193550	0 7.6	48 25 47.5	N. 0 10 26.4	9.4961668
28	2 38 31.69	15 41 48.2	0.1169846	0 12.0	54 32 28.6	0 55 19.1	4928546
29	2 46 50.80	16 30 57.2	0.1141287	0 16.4	60 44 16.6	1 40 9.5	4903399
30	2 55 12.55	17 18 43.2	0.1107783	0 20.8	66 59 57.6	2 24 14.7	4886771
May 1	3 3 35.88	18 4 54.1	0.1069290	0 25.3	73 18 9.5	3 6 50.6	4879030
2	3 11 59.68	18 49 17.9	0.1025803	0 29.8	79 37 24.9	3 47 14.5	4880345
3	3 20 22.76	N. 19 31 44.2	0.0977377	0 34.2	85 56 13.2	N. 4 24 47.0	9.4890688
4	3 28 43.90	20 12 3.5	0.0924113	0 38.6	92 13 3.9	4 58 54.0	4909829
5	3 37 1.84	20 50 7.6	0.0866152	0 43.0	98 26 28.9	5 29 8.1	4937349
6	3 45 15.37	21 25 49.7	0.0803676	0 47.3	104 35 6.3	5 55 9.4	4972663
7	3 53 23.28	21 59 5.0	0.0736903	0 51.5	110 37 42.1	6 16 46.1	5015069
8	4 1 24.41	22 29 49.8	0.0666068	0 55.6	116 33 12.0	6 33 54.1	5063753
9	4 9 17.71	N. 22 58 2.2	0.0591425	0 59.5	122 20 43.2	N. 6 46 36.3	9.5117865
10	4 17 2.13	23 23 41.6	0.0513250	1 3.3	127 59 34.1	6 55 1.4	5176523
11	4 24 36.79	23 46 48.7	0.0431806	1 6.9	133 29 14.7	6 59 22.9	5238855
12	4 32 0.79	24 7 25.2	0.0347371	1 10.3	138 49 25.8	6 59 57.7	5304028
13	4 39 13.37	24 25 33.9	0.0260209	1 13.6	143 59 58.0	6 57 4.9	53371263
14	4 46 13.82	24 41 18.5	0.0170575	1 16.7	149 0 50.4	6 51 4.5	5439841
15	4 53 1.47	N. 24 54 43.0	0.0078722	1 19.6	153 52 9.4	N. 6 42 17.2	9.5509106
16	4 59 35.71	25 5 52.1	9.9984889	1 22.2	158 34 7.2	6 31 2.9	5578487
17	5 5 56.00	25 14 50.7	9.9889302	1 24.6	163 7 0.9	6 17 40.6	5647484
18	5 12 1.82	25 21 44.3	9.9792189	1 26.7	167 31 10.5	6 2 28.4	5715658
19	5 17 52.67	N. 25 26 38.2	9.9693752	1 28.6	171 46 59.3	N. 5 45 42.6	9.5782644

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May 19	h m s 5 17 52.67	N.25 26 38.2	9.9693752	h m 1 28.6	171 46 59.3	N.5 45 42.6	9.5782644
20	5 23 28.07	25 29 37.9	.9594203	1 30.3	175 54 51.6	5 27 38.1	.5848123
21	5 28 47.61	25 30 49.1	.9493742	1 31.6	179 55 12.8	5 8 28.4	.5911840
22	5 33 50.82	25 30 17.3	.9392556	1 32.7	183 48 28.8	4 48 25.2	.5973577
23	5 38 37.29	25 28 8.1	.9290855	1 33.5	187 35 5.8	4 27 39.3	.6033163
24	5 43 6.60	25 24 27.0	.9188841	1 34.1	191 15 28.9	4 6 19.7	.6090451
25	5 47 18.34	N.25 19 19.3	9.9086719	1 34.3	194 50 3.1	N.3 44 34.5	9.6145334
26	5 51 12.12	25 12 50.4	.8984706	1 34.2	198 19 12.8	3 22 30.8	.6197725
27	5 54 47.54	25 5 5.7	.8883030	1 33.8	201 43 21.2	3 0 14.5	.6247559
28	5 58 4.23	24 56 10.0	.8781935	1 33.1	205 2 50.5	2 37 51.0	.6294781
29	6 1 1.82	24 46 8.7	.8681677	1 32.1	208 18 2.4	2 15 24.7	.6339363
30	6 3 39.98	24 35 6.6	.8582532	1 30.8	211 29 17.7	1 52 59.6	.6381280
31	6 5 58.41	N.24 23 8.6	9.8484800	1 29.1	214 36 55.5	N.1 30 38.9	9.6420518
June 1	6 7 56.83	24 10 19.7	.8388804	1 27.1	217 41 15.0	1 8 25.7	.6457065
2	6 9 35.07	23 56 44.6	.8294896	1 24.8	220 42 33.5	0 46 22.4	.6490929
3	6 10 52.98	23 42 28.0	.8203444	1 22.2	223 41 8.5	0 24 31.2	.6522104
4	6 11 50.49	23 27 34.9	.8114854	1 19.2	226 37 16.4	N.0 2 53.9	.6550603
5	6 12 27.67	23 12 10.2	.8029556	1 15.9	229 31 12.9	8.0 18 27.6	.6576425
6	6 12 44.71	N.22 56 18.8	9.7948000	1 12.2	232 23 12.9	8.0 39 32.0	9.6599589
7	6 12 41.92	22 40 5.7	.7870664	1 8.2	235 13 31.1	1 0 17.9	.6620100
8	6 12 19.78	22 23 36.3	.7798046	1 3.9	238 2 21.5	1 20 44.2	.6637968
9	6 11 38.98	22 6 56.2	.7730649	0 59.3	240 49 57.8	1 40 49.6	.6653207
10	6 10 40.37	21 50 11.2	.7668996	0 54.4	243 36 33.1	2 0 33.0	.6665821
11	6 9 25.04	21 33 27.2	.7613591	0 49.2	246 22 20.5	2 19 53.4	.6675819
12	6 7 54.26	N.21 16 50.7	9.7564934	0 43.7	249 7 32.6	8.2 38 49.8	9.6683207
13	6 6 9.57	21 0 28.3	.7523494	0 38.0	251 52 22.0	2 57 21.2	.6687993
14	6 4 12.68	20 44 27.3	.7489707	0 32.2	254 37 0.9	3 15 26.4	.6690176
15	6 2 5.53	20 28 54.9	.7463953	0 26.2	257 21 41.7	3 33 4.3	.6689758
16	5 59 50.21	20 13 58.5	.7446559	0 20.0	260 6 36.5	3 50 13.8	.6686740
17	5 57 28.98	19 59 45.7	.7437767	0 13.7	262 51 57.5	4 6 53.5	.6681120
18	5 55 4.18	N.19 46 24.2	9.7437749	0 7.4	265 37 57.1	8.4 23 2.1	9.6672895
19	5 52 38.25	19 34 1.1	.7446583	{ 0 1.0 }	268 24 47.6	4 38 38.0	.6662059
20	5 50 13.61	19 22 43.7	.7464267	23 48.4	271 12 41.6	4 53 39.6	.6648604
21	5 47 52.70	19 12 38.3	.7490701	23 42.3	274 1 51.6	5 8 5.0	.6632524
22	5 45 37.87	19 3 50.9	.7525701	23 36.3	276 52 30.9	5 21 52.4	.6613809
23	5 43 31.33	18 56 26.5	.7568999	23 30.4	279 44 52.8	5 34 59.4	.6592449
24	5 41 35.19	N.18 50 29.3	9.7620270	23 24.8	282 39 10.8	8.5 47 23.6	9.6568433
25	5 39 51.35	18 46 2.4	.7679113	23 19.3	285 35 39.1	5 59 2.4	.6541755
26	5 38 21.56	18 43 7.7	.7745082	23 14.2	288 34 32.3	6 9 52.8	.6512398
27	5 37 7.33	18 41 46.2	.7817690	23 9.3	291 36 5.4	6 19 51.5	.6480364
28	5 36 10.01	18 41 57.6	.7896431	23 4.7	294 40 34.0	6 28 54.9	.6445642
29	5 35 30.72	18 43 40.7	.7980775	23 0.4	297 48 14.4	6 36 59.0	.6408233
30	5 35 10.41	N.18 46 52.9	9.8070195	22 56.4	300 59 23.5	8.6 43 59.6	9.6368128
July 1	5 35 9.84	18 51 31.0	.8164160	22 52.8	304 14 18.8	6 49 51.9	.6325367
2	5 35 29.64	18 57 31.0	.8262153	22 49.5	307 33 18.4	6 54 30.6	.6279936
3	5 36 10.28	19 4 47.5	.8363663	22 46.6	310 56 41.2	6 57 50.2	.6231873
4	5 37 12.12	N.19 13 14.7	9.8468205	22 44.0	314 24 46.9	8.6 59 44.4	9.6181218

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
July 4	^{h m s} 5 37 12.12	^{° ' "} N.19 13 14.7	9.8468205	^{h m} 22 44.0	^{° ' "} 314 24 46.9	^{° ' "} 8. 6 59 44.4	9.6181218
5	5 38 35.40	19 22 46.7	.8575316	22 41.8	317 57 56.0	7 0 6.8	.6128024
6	5 40 20.31	19 33 16.1	.8684552	22 39.9	321 36 29.3	6 58 50.1	.6072361
7	5 42 26.96	19 44 35.4	.8795485	22 38.5	325 20 48.4	6 55 46.8	.6014326
8	5 44 55.39	19 56 36.7	.8907717	22 37.4	329 11 15.5	6 50 48.9	.5954039
9	5 47 45.61	20 9 11.4	.9020859	22 36.6	333 8 12.8	6 43 48.2	.5891648
10	5 50 57.59	N.20 22 10.6	9.9134549	22 36.2	337 12 3.1	8. 6 34 35.9	9.5827345
11	5 54 31.26	20 35 25.0	.9248424	22 36.2	341 23 8.6	6 23 3.5	.5761356
12	5 58 26.52	20 48 44.7	.9362147	22 36.5	345 41 51.3	6 9 2.4	.5693960
13	6 2 43.25	21 1 59.8	.9475380	22 37.1	350 8 32.2	5 52 24.2	.5625484
14	6 7 21.28	21 14 59.6	.9587795	22 38.1	354 43 30.9	5 33 1.7	.5556317
15	6 12 20.41	21 27 33.1	.9699059	22 39.5	359 27 4.8	5 10 48.5	.5486920
16	6 17 40.35	N.21 39 29.0	9.9808848	22 41.2	4 19 28.6	8. 4 45 39.9	9.5417815
17	6 23 20.80	21 50 35.7	.9916830	22 43.3	9 20 53.0	4 17 33.9	.5349598
18	6 29 21.32	22 0 41.4	.0022676	22 45.7	14 31 24.3	3 46 31.0	.5282948
19	6 35 41.41	22 9 34.0	.0126062	22 48.4	19 51 2.9	3 12 35.7	.5218599
20	6 42 20.42	22 17 1.4	.0226643	22 51.4	25 19 42.0	2 35 56.8	.5157356
21	6 49 17.59	22 22 51.8	.0324092	22 54.7	30 57 7.2	1 56 48.4	.5100061
22	6 56 31.98	N.22 26 53.4	.0418084	22 58.2	36 42 54.7	8. 1 15 30.1	9.5047597
23	7 4 2.53	22 28 55.3	.0508304	23 2.0	42 36 31.0	8. 0 32 27.3	.5000837
24	7 11 47.98	22 28 47.3	.0594445	23 6.1	48 37 11.9	N.0 11 48.9	.4960618
25	7 19 46.91	22 26 20.1	.0676233	23 10.3	54 44 2.7	0 56 42.0	.4927733
26	7 27 57.76	22 21 26.0	.0753416	23 14.7	60 55 58.3	1 41 31.7	.4902839
27	7 36 18.83	22 13 58.7	.0825781	23 19.3	67 11 44.4	2 25 34.7	.4886478
28	7 44 48.32	N.22 3 53.8	.0893164	23 24.0	73 29 58.9	N.3 8 7.1	9.4879008
29	7 53 24.35	21 51 8.9	.0955438	23 28.7	79 49 14.2	3 48 26.2	.4880600
30	8 2 5.05	21 35 43.5	.1012538	23 33.5	86 7 59.6	4 25 52.9	.4891217
31	8 10 48.56	21 17 39.1	.1064446	23 38.3	92 24 44.6	4 59 53.1	.4910614
Aug. 1	8 19 33.04	20 56 59.0	.1111200	23 43.1	98 38 1.4	5 29 59.6	.4938375
2	8 28 16.85	20 33 48.4	.1152880	23 47.9	104 46 28.3	5 55 52.9	.4973914
3	8 36 58.42	N.20 8 13.7	.01189613	23 52.6	110 48 51.4	N.6 17 21.5	9.5016518
4	8 45 36.40	19 40 22.5	.1221561	23 57.3	116 44 7.1	6 34 21.3	.5065375
5	8 54 9.54	19 10 23.4	.1248913	*	122 31 22.5	6 46 55.4	.5119632
6	9 2 36.84	18 38 25.4	.1271884	0 1.9	128 9 56.7	6 55 12.9	.5178409
7	9 10 57.46	18 4 38.1	.1290691	0 6.2	133 39 20.0	6 59 27.3	.5240835
8	9 19 10.72	17 29 10.8	.1305570	0 10.5	138 59 13.5	6 59 55.4	.5306077
9	9 27 16.12	N.16 52 13.1	.01316757	0 14.6	144 9 27.9	N.6 56 56.5	9.5373357
10	9 35 13.32	16 13 54.2	.1324471	0 18.6	149 10 2.7	6 50 50.9	.5441958
11	9 43 2.05	15 34 22.9	.1328937	0 22.5	154 1 4.4	6 41 58.8	.5511233
12	9 50 42.19	14 53 47.7	.1330361	0 26.3	158 42 45.4	6 30 40.3	.5580602
13	9 58 13.72	14 12 16.3	.1328946	0 29.9	163 15 22.8	6 17 14.5	.5649576
14	10 5 36.68	13 29 56.3	.1324871	0 33.3	167 39 17.0	6 1 59.1	.5717714
15	10 12 51.16	N.12 46 54.4	.01318302	0 36.6	171 54 50.9	N.5 45 10.7	9.5784655
16	10 19 57.32	12 3 17.2	.1309401	0 39.8	176 2 29.2	5 27 4.0	.5850083
17	10 26 55.35	11 19 10.7	.1298303	0 42.8	180 2 37.3	5 7 52.5	.5913740
18	10 33 45.44	10 34 40.1	.1285131	0 45.7	183 55 41.0	4 47 47.9	.5975411
19	10 40 27.85	N. 9 49 50.6	.01269998	0 48.4	187 42 6.2	N.4 27 0.8	9.6034926

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.	Heliocentric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Aug. 19	h m s 10 40 27.85	N. 9 49 50.6	0.1269998	h m 0 48.4	187 42 6.2	N. 4 27 0.8	9.6034926
20	10 47 2.79	9 4 46.8	.1253008	0 51.1	191 22 18.4	4 5 40.3	.6092140
21	10 53 30.53	8 19 33.0	.1234243	0 53.6	194 56 42.6	3 43 54.4	.6146947
22	10 59 51.31	7 34 13.3	.1213785	0 56.0	198 25 42.9	3 21 50.2	.6199259
23	11 6 5.37	6 48 51.0	.1191690	0 58.3	201 49 42.5	2 59 33.6	.6249011
24	11 12 12.97	6 3 29.9	.1168020	1 0.5	205 9 3.9	2 37 9.9	.6296154
25	11 18 14.32	N. 5 18 12.8	0.1142820	1 2.6	208 24 8.5	N. 2 14 43.6	9.6340655
26	11 24 9.66	4 33 2.9	.1116128	1 4.5	211 35 16.9	1 52 18.5	.6382491
27	11 29 59.18	3 48 2.8	.1087969	1 6.4	214 42 48.5	1 29 58.0	.6421646
28	11 35 43.10	3 3 15.1	.1058368	1 8.2	217 47 2.2	1 7 45.0	.6458112
29	11 41 21.59	2 18 42.2	.1027342	1 9.9	220 48 15.7	0 45 42.0	.6491892
30	11 46 54.79	1 34 26.9	.0994897	1 11.5	223 46 46.1	0 23 51.2	.6522985
Sept. 1	11 52 22.90	N. 0 50 30.8	0.0961037	1 13.0	226 42 49.9	N. 0 2 14.4	9.6551402
2	11 57 46.02	N. 0 6 56.4	.0925759	1 14.4	229 36 42.6	S. 0 19 6.8	.6577144
3	12 3 4.28	S. 0 36 14.3	.0889055	1 15.8	232 28 39.4	0 40 10.6	.6600227
4	12 8 17.76	1 18 59.0	.0850915	1 17.1	235 18 54.8	1 0 55.9	.6620657
5	12 13 26.54	2 1 16.0	.0811316	1 18.3	238 7 42.8	1 21 21.6	.6638447
6	12 18 30.67	2 43 3.0	.0770244	1 19.4	240 55 17.1	1 41 26.3	.6653605
7	12 23 30.17	S. 3 24 18.1	0.0727666	1 20.5	243 41 50.8	S. 2 1 9.1	9.6666140
8	12 28 25.06	4 4 59.2	.0683553	1 21.4	246 27 37.1	2 20 28.9	.6676058
9	12 33 15.31	4 45 4.1	.0637874	1 22.3	249 12 48.5	2 39 24.5	.6683367
10	12 38 0.86	5 24 31.0	.0590593	1 23.1	251 57 37.4	2 57 55.0	.6688074
11	12 42 41.67	6 3 17.3	.0541665	1 23.9	254 42 16.3	3 15 59.4	.6690178
12	12 47 17.61	6 41 21.0	.0491044	1 24.5	257 26 57.4	3 33 36.5	.6696884
13	12 51 48.53	S. 7 18 39.4	0.0438688	1 25.1	260 11 52.9	S. 3 50 45.1	9.6686587
14	12 56 14.26	7 55 10.3	.0384547	1 25.6	262 57 14.9	4 7 23.9	.6680890
15	13 0 34.59	8 30 50.6	.0328570	1 26.0	265 43 15.9	4 23 31.4	.6672586
16	13 4 49.22	9 5 37.5	.0270703	1 26.3	268 30 8.1	4 39 6.3	.6661672
17	13 8 57.86	9 39 28.0	.0210894	1 26.5	271 18 4.1	4 54 6.8	.6648136
18	13 13 0.12	10 12 18.5	.0149091	1 26.6	274 7 16.7	5 8 31.1	.6631980
19	13 16 55.57	S. 10 44 5.4	0.0085244	1 26.6	276 57 58.9	S. 5 22 17.3	9.6613184
20	13 20 43.71	11 14 44.6	0.0019307	1 26.5	279 50 24.1	5 35 23.0	.6591744
21	13 24 23.98	11 44 11.7	.99951238	1 26.2	282 44 45.8	5 47 45.9	.6567649
22	13 27 55.75	12 12 21.9	.9881002	1 25.7	285 41 18.3	5 59 23.3	.6540890
23	13 31 18.26	12 39 9.5	.9808578	1 25.1	288 40 16.1	6 10 12.1	.6511453
24	13 34 30.74	13 4 29.0	.9733947	1 24.3	291 41 54.3	6 20 9.1	.6479339
25	13 37 32.23	S. 13 28 13.7	9.9657125	1 23.4	294 46 28.6	S. 6 29 10.7	9.6444535
26	13 40 21.75	13 50 16.1	.9578141	1 22.3	297 54 15.1	6 37 13.0	.6407045
27	13 42 58.18	14 10 28.6	.9497049	1 21.0	301 5 30.7	6 44 11.6	.6366869
28	13 45 20.30	14 28 41.8	.9413955	1 19.4	304 20 33.0	6 50 1.6	.6324018
29	13 47 26.74	14 44 46.0	.9328995	1 17.5	307 39 40.3	6 54 38.0	.6278506
30	13 49 16.11	14 58 30.3	.9242370	1 15.3	311 3 11.3	6 57 55.0	.6230366
Oct. 1	13 50 46.85	S. 15 9 43.1	9.9154354	1 12.9	314 31 25.9	S. 6 59 46.6	9.6179635
2	13 51 57.35	15 18 10.6	.9065297	1 10.1	318 4 44.4	7 0 5.9	.6126362
3	13 52 45.96	15 23 39.1	.8975660	1 7.0	321 43 27.8	6 58 46.1	.6070627
4	13 53 11.03	15 25 53.5	.8886011	1 3.4	325 27 57.7	6 55 39.4	.6012523
5	13 53 10.97	S. 15 24 38.0	9.8797064	0 59.5	329 18 36.3	S. 6 50 37.8	9.5952168

MEAN TIME.

Month and Day.	Apparent		Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric		Log. of Rad. Vect.		
	Right Ascension.	Declination.			Longitude.	Latitude.			
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.		
Oct.	4	h m s 13 53 10.97	S. 15 24 38.0	9.8797064	h m 0 59.5	329 18 36.3	8.6 50 37.8	9.5952168	
	5	13 52 44.31	15 19 36.9	.8709692	0 55.1	333 15 45.8	6 43 33.2	.5889718	
	6	13 51 49.88	15 10 34.4	.8624938	0 50.3	337 19 48.9	6 34 16.8	.5825362	
	7	13 50 26.81	14 57 16.4	.8544033	0 45.0	341 31 8.0	6 22 39.9	.5759327	
	8	13 48 34.81	14 39 31.2	.8468390	0 39.2	345 50 4.8	6 8 34.0	.5691891	
	9	13 46 14.22	14 17 11.4	.8399601	0 32.9	350 17 0.6	5 51 50.9	.5623388	
	10	13 43 26.27	S. 13 50 15.4	9.8339403	0 26.2	354 52 14.6	8.5 32 23.3	9.5554209	
	11	13 40 13.18	13 18 49.6	.8289629	0 19.1	359 36 4.4	5 10 4.7	.5484809	
	12	13 36 38.28	12 43 10.6	.8252118	0 11.6	4 28 44.3	4 44 50.8	.5415725	
	13	13 32 46.04	12 3 46.3	.8228632	{ 0 11.8 }	9 30 25.3	4 16 39.3	.5347546	
	14	13 28 42.04	11 21 17.3	.8220699	23 47.8	14 41 13.3	3 45 31.0	.5280954	
	15	13 24 32.80	10 36 35.6	.8229513	23 39.7	20 1 8.3	3 11 30.5	.5216689	
	16	13 20 25.47	S. 9 50 44.3	9.8255800	23 31.8	25 30 3.7	8.2 34 46.9	9.5155556	
	17	13 16 27.49	9 4 53.8	.8299735	23 24.3	31 7 44.4	1 55 34.2	.5098396	
	18	13 12 46.18	8 20 16.5	.8360883	23 17.1	36 53 46.7	1 14 12.3	.5046091	
	19	13 9 28.32	7 38 3.8	.8438226	23 10.4	42 47 36.4	8.0 31 6.7	.4999519	
	20	13 6 39.73	6 59 20.9	.8530238	23 4.2	48 48 29.4	N. 0 13 11.1	.4959512	
	21	13 4 25.07	6 25 2.8	.8634974	22 58.6	54 55 30.3	0 58 4.7	.4926859	
	22	13 2 47.68	S. 5 55 51.9	9.8750232	22 53.7	61 7 34.0	N. 1 42 53.6	9.4902220	
	23	13 1 49.51	5 32 17.5	.8873675	22 49.4	67 23 25.8	2 26 54.5	.4886126	
	24	13 1 31.26	5 14 34.8	.9002994	22 45.8	73 41 43.3	3 9 23.4	.4878930	
	25	13 1 52.47	5 2 47.9	.9135982	22 42.8	80 0 58.9	3 49 37.8	.4880797	
	26	13 2 51.81	4 56 49.8	.9270640	22 40.4	86 19 41.8	4 26 58.6	.4891683	
	27	13 4 27.20	4 56 25.7	.9405222	22 38.6	92 36 21.7	5 0 52.0	.4911344	
	28	13 6 36.12	S. 5 1 14.8	9.9538246	22 37.3	98 49 30.9	N. 5 30 51.0	9.4939348	
	29	13 9 15.70	5 10 52.1	.9668503	22 36.5	104 57 47.6	5 56 36.4	.4975116	
	30	13 12 23.03	5 24 50.5	.9795059	22 36.0	110 59 58.7	6 17 56.7	.5017920	
	31	13 15 55.14	5 42 41.9	.99917205	22 36.0	116 55 0.3	6 34 48.3	.5066953	
	Nov.	1	13 19 49.21	6 3 58.5	.00034443	22 36.2	122 42 0.4	6 47 14.4	.5121361
		2	13 24 2.55	6 28 13.1	.0146454	22 36.8	128 20 18.2	6 55 24.2	.5180260
		3	13 28 32.74	S. 6 55 0.5	0.0253056	22 37.6	133 49 24.4	N. 6 59 31.4	9.5242785
4		13 33 17.54	7 23 57.2	.0354186	22 38.6	139 9 0.3	6 59 53.0	.5308098	
5		13 38 15.02	7 54 41.4	.0449878	22 39.8	144 18 57.0	6 56 48.2	.5375427	
6		13 43 23.41	8 26 53.3	.0540217	22 41.1	149 19 14.3	6 50 37.0	.5444056	
7		13 48 41.24	9 0 16.3	.0625354	22 42.6	154 9 58.7	6 41 40.1	.5513341	
8		13 54 7.19	9 34 33.7	.0705460	22 44.2	158 51 22.9	6 30 17.4	.5582707	
9		13 59 40.16	S. 10 9 31.8	0.0780740	22 45.9	163 23 44.0	N. 6 16 47.9	9.5651660	
10		14 5 19.21	10 44 58.4	.0851405	22 47.7	167 47 22.7	6 1 29.5	.5719769	
11		14 11 3.53	11 20 42.4	.0917668	22 49.6	172 2 41.8	5 44 38.4	.5786667	
12		14 16 52.47	11 56 34.7	.0979745	22 51.5	176 10 6.1	5 26 29.6	.5825045	
13		14 22 45.48	12 32 26.6	.1037845	22 53.5	180 10 0.9	5 7 16.2	.5915646	
14		14 28 42.08	13 8 10.4	.1092179	22 55.6	184 2 52.1	4 47 10.2	.5977252	
15		14 34 41.91	S. 13 43 40.1	0.1142932	22 57.7	187 49 5.6	N. 4 26 21.8	9.6036701	
16		14 40 44.68	14 18 49.9	.1190292	22 59.8	191 29 7.0	4 5 0.4	.6093841	
17		14 46 50.12	14 53 34.3	.1234430	23 2.0	195 3 21.1	3 43 13.9	.6148574	
18		14 52 58.04	15 27 48.9	.1275510	23 4.2	198 32 11.9	3 21 9.2	.6200811	
19		14 59 8.29	S. 16 1 29.8	0.1313680	23 6.5	201 56 2.8	N. 2 58 52.3	9.6250485	

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 19	h m s 14 59 8.29	S. 16 1 29.8	0.1313680	h m 23 6.5	o / " 201 56 2.8	N. 2 58 52.3	9.6250485
20	15 5 20.79	16 34 33.5	.1349076	23 8.8	205 15 16.1	2 36 28.4	.6297548
21	15 11 35.36	17 6 56.2	.1381828	23 11.1	208 30 13.3	2 14 2.1	.6341968
22	15 17 51.99	17 38 35.3	.1412055	23 13.5	211 41 14.8	1 51 37.1	.6383721
23	15 24 10.62	18 9 28.2	.1439865	23 15.9	214 48 40.2	1 29 16.8	.6422795
24	15 30 31.22	18 39 32.4	.1465353	23 18.3	217 52 48.1	1 7 4.1	.6459181
25	15 36 53.74	S. 19 8 45.3	0.1488612	23 20.8	220 53 56.4	N. 0 45 1.4	9.6492878
26	15 43 18.20	19 37 5.0	.1509725	23 23.3	223 52 22.2	0 23 11.0	.6523891
27	15 49 44.55	20 4 29.6	.1528763	23 25.8	226 48 21.8	N. 0 134.7	.6552227
28	15 56 12.82	20 30 57.0	.1545793	23 28.4	229 42 10.8	S. 0 1945.9	.6577889
29	16 2 43.00	20 56 25.5	.1560876	23 31.0	232 34 4.3	0 40 49.3	.6600893
30	16 9 15.09	21 20 53.3	.1574064	23 33.6	235 24 16.9	1 134.0	.6621224
Dec. 1	16 15 49.11	S. 21 44 18.9	0.1585401	23 36.3	238 13 2.5	S. 1 21 59.0	9.6638953
2	16 22 25.04	22 6 40.5	.1594927	23 39.0	241 0 34.7	1 42 3.1	.6654032
3	16 29 2.89	22 27 56.8	.1602674	23 41.7	243 47 6.9	2 145.2	.6666488
4	16 35 42.68	22 48 6.2	.1608674	23 44.5	246 32 51.9	2 21 4.2	.6676327
5	16 42 24.37	23 7 7.1	.1612940	23 47.3	249 18 2.4	2 39 59.1	.6683557
6	16 49 7.95	23 24 58.2	.1615497	23 50.1	252 2 50.9	2 58 28.9	.6688184
7	16 55 53.41	S. 23 41 38.0	0.1616351	23 52.9	254 47 29.7	S. 3 16 32.4	9.6690211
8	17 2 40.70	23 57 4.9	.1615503	23 55.8	257 32 11.0	3 34 8.6	.6689635
9	17 9 29.81	24 11 17.8	.1612960	23 58.7	260 17 7.1	3 51 16.3	.6686461
10	17 16 20.69	24 24 15.1	.1608714	* *	263 2 30.2	4 7 54.1	.6680683
11	17 23 13.26	24 35 55.5	.1602752	0 1.7	265 48 32.5	4 24 0.7	.6672300
12	17 30 7.48	24 46 17.4	.1595060	0 4.6	268 35 26.5	4 39 34.6	.6661307
13	17 37 3.27	S. 24 55 19.6	0.1585611	0 7.6	271 23 24.8	S. 4 54 34.0	9.6647692
14	17 44 0.53	25 3 0.6	.1574380	0 10.6	274 12 40.1	5 8 57.2	.6631451
15	17 50 59.16	25 9 19.3	.1561335	0 13.7	277 3 25.1	5 22 42.1	.6612576
16	17 57 59.06	25 14 14.2	.1546434	0 16.7	279 55 53.6	5 35 46.5	.6591055
17	18 5 0.08	25 17 44.1	.1529634	0 19.8	282 50 19.3	5 48 8.0	.6566877
18	18 12 2.08	25 19 47.7	.1510873	0 22.9	285 46 56.0	5 59 43.9	.6540037
19	18 19 4.92	S. 25 20 23.9	0.1490097	0 26.0	288 45 58.5	S. 6 10 31.2	9.6510517
20	18 26 8.39	25 19 31.4	.1467238	0 29.1	291 47 41.9	6 20 26.6	.6478320
21	18 33 12.29	25 17 9.3	.1442222	0 32.3	294 52 21.8	6 29 26.5	.6443434
22	18 40 16.41	25 13 16.6	.1414963	0 35.4	298 0 14.5	6 37 26.9	.6405861
23	18 47 20.47	25 7 52.2	.1385373	0 38.6	301 11 36.8	6 44 23.4	.6365602
24	18 54 24.20	25 0 55.6	.1353345	0 41.7	304 26 46.4	6 50 11.3	.6322666
25	19 1 27.30	S. 24 52 26.0	0.1318775	0 44.8	307 46 1.4	S. 6 54 45.3	9.6277073
26	19 8 29.40	24 42 22.9	.1281539	0 47.9	311 9 40.9	6 57 59.8	.6228853
27	19 15 30.15	24 30 46.0	.1241512	0 51.0	314 38 4.6	6 59 48.6	.6178042
28	19 22 39.09	24 17 35.3	.1198547	0 54.0	318 11 32.8	7 0 5.1	.6124693
29	19 29 25.77	24 2 51.0	.1152493	0 57.0	321 50 26.5	6 58 42.0	.6068881
30	19 36 19.64	23 46 33.6	.1103192	1 0.0	325 35 7.4	6 55 31.9	.6010705
31	19 43 10.11	S. 23 28 44.0	0.1050464	1 2.9	329 25 57.7	S. 6 50 26.6	9.5950283
32	19 49 56.52	S. 23 9 23.7	0.0994123	1 5.7	333 23 19.6	S. 6 43 18.1	9.5887770

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Jan. 1	h m s 21 43 55.60	S. 15 29 42.7	0.0186525	h m 2 58.7	0 1 11 27 44 31.4	8.2 31 15.1	9.8599447
2	21 48 30.87	15 4 10.3	.0158672	2 59.3	29 20 24.8	2 27 23.5	.8598639
3	21 53 4.56	14 38 15.8	.0130538	2 59.9	30 56 19.8	2 23 24.9	.8597825
4	21 57 36.69	14 12 0.0	.0102118	3 0.5	32 32 16.4	2 19 19.6	.8597008
5	22 2 7.25	13 45 23.7	.0073408	3 1.1	34 8 14.6	2 15 7.6	.8596188
6	22 6 36.26	13 18 27.8	.0044404	3 1.6	35 44 14.4	2 10 49.3	.8595365
7	22 11 3.73	S. 12 51 13.1	0.0015103	3 2.1	37 20 15.9	8.2 6 24.7	9.8594540
8	22 15 29.67	12 23 40.3	9.9985502	3 2.6	38 56 19.0	2 1 54.2	.8593714
9	22 19 54.10	11 55 50.4	.9955598	3 3.1	40 32 23.8	1 57 17.8	.8592887
10	22 24 17.03	11 27 44.0	.9925387	3 3.5	42 8 30.2	1 52 35.8	.8592061
11	22 28 38.48	10 59 22.0	.9894866	3 3.9	43 44 38.3	1 47 48.4	.8591235
12	22 32 58.47	10 30 45.2	.9864031	3 4.3	45 20 48.0	1 42 55.9	.8590410
13	22 37 17.01	S. 10 1 54.4	9.9832879	3 4.7	46 56 59.5	8.1 37 58.4	9.8589588
14	22 41 34.12	9 32 50.3	.9801407	3 5.0	48 33 12.7	1 32 56.2	.8588768
15	22 45 49.82	9 3 33.8	.9769611	3 5.4	50 9 27.5	1 27 49.5	.8587951
16	22 50 4.13	8 34 5.7	.9737487	3 5.7	51 45 44.1	1 22 38.6	.8587138
17	22 54 17.07	8 4 26.8	.9705031	3 5.9	53 22 2.4	1 17 23.7	.8586330
18	22 58 28.66	7 34 37.6	.9672239	3 6.2	54 58 22.5	1 12 5.0	.8585527
19	23 2 38.93	S. 7 4 39.0	9.9639107	3 6.4	56 34 44.3	8.1 6 42.7	9.8584730
20	23 6 47.89	6 34 31.8	.9605631	3 6.6	58 11 7.9	1 1 17.3	.8583940
21	23 10 55.57	6 4 16.8	.9571806	3 6.8	59 47 33.2	0 55 48.8	.8583157
22	23 15 1.98	5 33 54.5	.9537627	3 7.0	61 24 .03	0 50 17.6	.8582381
23	23 19 7.16	5 3 25.9	.9503090	3 7.1	63 0 29.2	0 44 43.9	.8581614
24	23 23 11.14	4 32 51.5	.9468188	3 7.2	64 36 59.9	0 39 7.9	.8580856
25	23 27 13.94	S. 4 2 12.0	9.9432917	3 7.3	66 13 32.4	8.0 33 29.9	9.8580107
26	23 31 15.57	3 31 28.1	.9397270	3 7.4	67 50 6.7	0 27 50.3	.8579369
27	23 35 16.04	3 0 40.6	.9361238	3 7.5	69 26 42.8	0 22 9.2	.8578641
28	23 39 15.36	2 29 50.4	.9324817	3 7.5	71 3 20.7	0 16 27.7	.8577925
29	23 43 13.57	1 58 58.1	.9287997	3 7.5	72 40 0.4	0 10 43.8	.8577221
30	23 47 10.67	1 28 4.3	.9250768	3 7.5	74 16 42.0	8.0 5 0.1	.8576529
Feb. 1	23 51 6.66	S. 0 57 9.9	9.9213125	3 7.5	75 53 25.3	N. 0 0 44.0	9.8575850
2	23 55 1.56	S. 0 26 15.4	.9175060	3 7.5	77 30 10.4	0 6 28.1	.8575185
3	23 58 55.37	N. 0 4 38.3	.9136565	3 7.4	79 6 57.3	0 12 12.1	.8574534
4	0 2 48.10	0 35 30.8	.9097631	3 7.4	80 43 46.0	0 17 55.6	.8573898
5	0 6 39.74	1 6 21.0	.9058254	3 7.3	82 20 36.5	0 23 38.3	.8573277
6	0 10 30.30	1 37 8.3	.9018429	3 7.2	83 57 28.7	0 29 20.0	.8572671
7	0 14 19.76	N. 2 7 51.9	9.8978149	3 7.1	85 34 22.7	N. 0 35 0.4	9.8572082
8	0 18 8.14	2 38 31.1	.88937406	3 6.9	87 11 18.5	0 40 39.2	.8571510
9	0 21 55.43	3 9 5.3	.8896195	3 6.8	88 48 16.0	0 46 16.1	.8570954
10	0 25 41.62	3 39 33.7	.8854511	3 6.6	90 25 15.2	0 51 50.9	.8570417
11	0 29 26.72	4 9 55.7	.8812348	3 6.4	92 2 16.1	0 57 23.3	.8569897
12	0 33 10.70	4 40 10.5	.8769698	3 6.2	93 39 18.7	1 2 53.1	.8569396
13	0 36 53.56	N. 5 10 17.4	9.8726558	3 6.0	95 16 23.0	N. 1 8 20.0	9.8568914
14	0 40 35.28	5 40 15.7	.8682919	3 5.7	96 53 28.9	1 13 43.6	.8568451
15	0 44 15.85	6 10 4.8	.8638778	3 5.4	98 30 36.4	1 19 3.8	.8568008
16	0 47 55.25	6 39 43.9	.8594126	3 5.2	100 7 45.4	1 24 20.3	.8567584
17	0 51 33.46	N. 7 9 12.4	9.8548960	3 4.9	101 44 56.0	N. 1 29 32.8	9.8567181

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Feb. 16	^{h m s} 0 51 33.46	^{° ' "} N. 7 9 12.4	9.8548960	^{h m} 3 4.9	^{° ' "} 101 44 56.0	^{° ' "} N. 1 29 32.8	9.8567181
17	0 55 10.46	7 38 29.6	.8503275	3 4.5	103 22 8.1	1 34 41.0	.8566799
18	0 58 46.24	8 7 34.9	.8457063	3 4.2	104 59 21.7	1 39 44.8	.8566438
19	1 2 20.76	8 36 27.5	.8410319	3 3.8	106 36 36.7	1 44 43.8	.8566098
20	1 5 54.00	9 5 7.0	.8363037	3 3.4	108 13 53.1	1 49 37.8	.8565779
21	1 9 25.94	9 33 32.7	.8315211	3 3.0	109 51 10.9	1 54 26.6	.8565482
22	1 12 56.55	N. 10 143.9	9.8266835	3 2.6	111 28 30.0	N. 1 59 10.0	9.8565208
23	1 16 25.77	10 29 40.1	.8217900	3 2.1	113 5 50.3	2 3 47.7	.8564956
24	1 19 53.57	10 57 20.6	.8168397	3 1.6	114 43 11.8	2 8 19.4	.8564726
25	1 23 19.90	11 24 44.7	.8118317	3 1.1	116 20 34.5	2 12 45.0	.8564519
26	1 26 44.71	11 51 51.9	.8067852	3 0.6	117 57 58.3	2 17 4.2	.8564335
27	1 30 7.94	12 18 41.5	.8016393	3 0.0	119 35 23.1	2 21 16.9	.8564175
28	1 33 29.51	N. 12 45 12.9	9.7964530	2 59.4	121 12 48.9	N. 2 25 22.8	9.8564037
Mar. 1	1 36 49.36	13 11 25.3	.7912055	2 58.8	122 50 15.6	2 29 21.7	.8563923
2	1 40 7.40	13 37 18.3	.7858958	2 58.2	124 27 43.2	2 33 13.4	.8563832
3	1 43 23.55	14 2 51.0	.7805235	2 57.5	126 5 11.6	2 36 57.7	.8563765
4	1 46 37.72	14 28 2.9	.7750878	2 56.8	127 42 40.7	2 40 34.5	.8563721
5	1 49 49.80	14 52 53.1	.7695883	2 56.1	129 20 10.4	2 44 3.6	.8563701
6	1 52 59.70	N. 15 17 21.1	9.7640248	2 55.3	130 57 40.7	N. 2 47 24.8	9.8563705
7	1 56 7.30	15 41 26.1	.7583966	2 54.4	132 35 11.6	2 50 37.9	.8563732
8	1 59 12.48	16 5 7.4	.7527036	2 53.6	134 12 42.9	2 53 42.7	.8563783
9	2 2 15.12	16 28 24.2	.7469456	2 52.7	135 50 14.5	2 56 39.2	.8563857
10	2 5 15.08	16 51 15.9	.7411226	2 51.7	137 27 46.3	2 59 27.1	.8563955
11	2 8 12.22	17 13 41.7	.7352345	2 50.7	139 5 18.4	3 2 6.4	.8564076
12	2 11 6.40	N. 17 35 40.9	9.7292814	2 49.7	140 42 50.5	N. 3 436.9	9.8564220
13	2 13 57.45	17 57 12.7	.7232638	2 48.6	142 20 22.7	3 6 58.5	.8564388
14	2 16 45.22	18 18 16.3	.7171823	2 47.4	143 57 54.8	3 9 11.1	.8564579
15	2 19 29.54	18 38 51.0	.7110373	2 46.2	145 35 26.8	3 11 14.5	.8564792
16	2 22 10.25	18 58 56.1	.7048297	2 45.0	147 12 58.6	3 13 8.7	.8565028
17	2 24 47.16	19 18 30.6	.6985605	2 43.6	148 50 30.0	3 14 53.6	.8565287
18	2 27 20.07	N. 19 37 33.8	9.6922313	2 42.2	150 28 1.0	N. 3 16 29.1	9.8565568
19	2 29 48.80	19 56 4.7	.6858435	2 40.7	152 5 31.6	3 17 55.1	.8565870
20	2 32 13.16	20 14 2.7	.6793993	2 39.2	153 43 1.5	3 19 11.6	.8566195
21	2 34 32.93	20 31 26.8	.6729001	2 37.6	155 20 30.8	3 20 18.5	.8566541
22	2 36 47.91	20 48 16.1	.6663481	2 35.9	156 57 59.3	3 21 15.7	.8566908
23	2 38 57.89	21 4 29.7	.6597456	2 34.1	158 35 27.0	3 22 3.3	.8567296
24	2 41 2.64	N. 21 20 6.6	9.6530950	2 32.2	160 12 53.8	N. 3 22 41.1	9.8567705
25	2 43 1.90	21 35 5.7	.6463991	2 30.3	161 50 19.5	3 23 9.1	.8568135
26	2 44 55.41	21 49 26.4	.6396612	2 28.2	163 27 44.2	3 23 27.4	.8568584
27	2 46 42.92	22 3 6.4	.6328849	2 26.0	165 5 7.6	3 23 35.9	.8569052
28	2 48 24.20	22 16 5.5	.6260745	2 23.8	166 42 29.8	3 23 34.7	.8569540
29	2 49 58.96	22 28 22.0	.6192345	2 21.4	168 19 50.7	3 23 23.6	.8570047
30	2 51 26.91	N. 22 39 54.4	9.6123702	2 18.9	169 57 10.1	N. 3 23 2.8	9.8570572
31	2 52 47.78	22 50 41.4	.6054878	2 16.3	171 34 28.0	3 22 32.2	.8571115
Apr. 1	2 54 1.31	23 0 41.4	.5985943	2 13.6	173 11 44.3	3 21 52.0	.8571675
2	2 55 7.21	23 9 52.7	.5916970	2 10.8	174 48 58.9	3 21 2.1	.8572253
3	2 56 5.17	N. 23 18 13.4	9.5848044	2 7.8	176 26 11.7	N. 3 20 2.6	9.8572847

MEAN TIME.							
Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.	Heliocentric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Apr. 3	^{h m s} 2 56 5.17	^{° ' "} N.23 18 13.4	9.5848044	^{h m} 2 7.8	^{° ' "} 176 26 11.7	^{° ' "} N.3 20 2.6	9.8572847
4	2 56 54.95	23 25 41.5	.5779259	2 4.7	178 3 22.7	3 18 53.5	.8573457
5	2 57 36.28	23 32 15.3	.5710716	2 1.4	179 40 31.9	3 17 35.0	.8574083
6	2 58 8.94	23 37 52.6	.5642529	1 58.0	181 17 39.0	3 16 7.0	.8574723
7	2 58 32.67	23 42 31.3	.5574822	1 54.4	182 54 44.1	3 14 29.7	.8575378
8	2 58 47.27	23 46 9.0	.5507727	1 50.7	184 31 47.1	3 12 43.1	.8576048
9	2 58 52.54	N.23 48 43.7	9.5441390	1 46.9	186 8 48.0	N.3 10 47.4	9.8576731
10	2 58 48.32	23 50 12.9	.5375967	1 42.9	187 45 46.6	3 8 42.6	.8577427
11	2 58 34.51	23 50 34.4	.5311626	1 38.7	189 22 43.0	3 6 28.9	.8578135
12	2 58 11.04	23 49 45.9	.5248551	1 34.4	190 59 37.0	3 4 6.4	.8578855
13	2 57 37.90	23 47 45.1	.5186934	1 29.9	192 36 28.6	3 1 35.1	.8579586
14	2 56 55.12	23 44 29.8	.5126977	1 25.2	194 13 17.8	2 58 55.3	.8580328
15	2 56 2.80	N.23 39 58.3	9.5068886	1 20.4	195 50 4.5	N.2 56 7.0	9.8581080
16	2 55 1.12	23 34 8.9	.5012882	1 15.5	197 26 48.7	2 53 10.4	.8581842
17	2 53 50.33	23 27 0.2	.4959193	1 10.4	199 3 30.3	2 50 5.7	.8582612
18	2 52 30.74	23 18 31.3	.4908044	1 5.1	200 40 9.4	2 46 53.0	.8583391
19	2 51 2.74	23 8 41.6	.4859662	0 59.7	202 16 45.8	2 43 32.5	.8584177
20	2 49 26.78	22 57 30.9	.4814274	0 54.2	203 53 19.6	2 40 4.3	.8584970
21	2 47 43.40	N.22 44 59.6	9.4772104	0 48.5	205 29 50.7	N.2 36 28.6	9.8585770
22	2 45 53.20	22 31 8.6	.4733366	0 42.8	207 6 19.1	2 32 45.6	.8586575
23	2 43 56.84	22 15 59.7	.4698265	0 36.9	208 42 44.8	2 28 55.5	.8587386
24	2 41 55.04	21 59 35.5	.4666999	0 31.0	210 19 7.7	2 24 58.4	.8588201
25	2 39 48.60	21 41 58.9	.4639750	0 24.9	211 55 27.9	2 20 54.7	.8589020
26	2 37 38.36	21 23 13.6	.4616685	0 18.8	213 31 45.4	2 16 44.4	.8589842
27	2 35 25.22	N.21 3 24.0	9.4597947	0 12.7	215 8 0.1	N.2 12 27.7	9.8590666
28	2 33 10.08	20 42 35.4	.4583659	0 6.6	216 44 12.0	2 8 5.0	.8591493
29	2 30 53.85	20 20 53.8	.4573914	{ ₂ 5.4}	218 20 21.2	2 3 36.4	.8592320
30	2 28 37.47	19 58 25.6	.4568783	23 48.0	219 56 27.7	1 59 2.0	.8593148
May 1	2 26 21.89	19 35 17.7	.4568306	23 41.8	221 32 31.4	1 54 22.2	.8593976
2	2 24 8.03	19 11 37.7	.4572491	23 35.7	223 8 32.4	1 49 37.1	.8594804
3	2 21 56.77	N.18 47 33.4	9.4581321	23 29.7	224 44 30.7	N.1 44 47.0	9.8595631
4	2 19 48.97	18 23 12.7	.4594746	23 23.7	226 20 26.3	1 39 52.1	.8596455
5	2 17 45.42	17 58 43.8	.4612696	23 17.8	227 56 19.3	1 34 57.2	.8597277
6	2 15 46.91	17 34 14.9	.4635059	23 12.0	229 32 9.7	1 29 49.0	.8598095
7	2 13 54.13	17 9 54.0	.4661705	23 6.3	231 7 57.4	1 24 41.2	.8598910
8	2 12 7.72	16 45 48.7	.4692485	23.0	232 43 42.5	1 19 29.6	.8599720
9	2 10 28.22	N.16 22 6.3	9.4727229	22 55.3	234 19 25.1	N.1 14 14.4	9.8600525
10	2 8 56.14	15 58 53.8	.4765748	22 50.0	235 55 5.2	1 8 55.9	.8601325
11	2 7 31.92	15 36 17.8	.4807840	22 44.8	237 30 42.9	1 3 34.2	.8602118
12	2 6 15.94	15 14 24.4	.4853290	22 39.7	239 6 18.1	0 58 9.8	.8602904
13	2 5 8.47	14 53 18.8	.4901882	22 34.8	240 41 51.0	0 52 42.8	.8603682
14	2 4 9.77	14 33 6.0	.4953381	22 30.0	242 17 21.6	0 47 13.4	.8604453
15	2 3 20.00	N.14 13 50.0	9.5007551	22 25.4	243 52 49.8	N.0 41 42.0	9.8605214
16	2 2 39.28	13 55 34.3	.5064166	22 20.9	245 28 15.9	0 36 8.8	.8605966
17	2 2 7.66	13 38 21.4	.5123005	22 16.6	247 3 39.8	0 30 34.0	.8606708
18	2 1 45.13	13 22 13.7	.5183843	22 12.5	248 39 1.6	0 24 57.9	.8607440
19	2 1 31.64	N.13 7 13.1	9.5246462	22 8.4	250 14 21.3	N.0 19 20.7	9.8608160

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May 19	h m s	° ' "		h m	° ' "	° ' "	
20	2 1 31.64	N.13 7 13.1	9.5246462	22 8.4	250 14 21.3	N.0 19 20.7	9.8608160
21	2 1 27.12	12 53 20.6	.5310654	22 4.5	251 49 39.1	0 13 42.8	.8608869
22	2 1 31.43	12 40 36.8	.5376219	22 0.8	253 24 54.9	0 8 4.4	.8609566
23	2 1 44.42	12 29 1.9	.5442969	21 57.2	255 0 8.9	N.0 2 25.7	.8610250
24	2 2 5.91	12 18 35.5	.5510730	21 53.8	256 35 21.1	S.0 3 13.1	.8610920
25	2 2 35.72	12 9 17.0	.5579337	21 50.5	258 10 31.5	0 8 51.5	.8611577
26	2 3 13.64	N.12 1 5.6	9.5648639	21 47.3	259 45 40.3	S.0 14 29.5	9.8612220
27	2 3 59.45	11 54 0.2	.5718494	21 44.2	261 20 47.5	0 20 6.7	.8612848
28	2 4 52.94	11 47 59.4	.5788773	21 41.3	262 55 53.2	0 25 42.8	.8613461
29	2 5 53.87	11 43 1.8	.5859357	21 38.5	264 30 57.4	0 31 17.7	.8614058
30	2 7 2.01	11 39 5.5	.5930141	21 35.8	266 6 0.2	0 36 51.1	.8614639
June 1	2 8 17.12	11 36 8.7	.6001026	21 33.2	267 41 1.8	0 42 22.7	.8615204
2	2 9 38.97	N.11 34 9.5	9.6071924	21 30.7	269 16 2.1	S.0 47 52.2	9.8615752
3	2 11 7.35	11 33 5.9	.6142755	21 28.4	270 51 1.2	0 53 19.5	.8616282
4	2 12 42.01	11 32 56.0	.6213446	21 26.1	272 25 59.2	0 58 44.3	.8616795
5	2 14 22.77	11 33 37.7	.6283934	21 23.9	274 0 56.3	1 4 6.2	.8617290
6	2 16 9.41	11 35 8.9	.6354164	21 21.8	275 35 52.4	1 9 25.2	.8617766
7	2 18 1.73	11 37 27.8	.6424080	21 19.0	277 10 47.6	1 14 41.0	.8618223
8	2 19 59.53	N.11 40 32.1	9.6493635	21 18.0	278 45 42.4	S.1 19 53.2	9.8618661
9	2 22 2.61	11 44 19.9	.6562789	21 16.2	280 20 35.7	1 25 1.8	.8619080
10	2 24 10.84	11 48 49.1	.6631508	21 14.4	281 55 28.7	1 30 6.4	.8619479
11	2 26 24.05	11 53 57.9	.6699757	21 12.8	283 30 21.2	1 35 6.8	.8619858
12	2 28 42.06	11 59 44.1	.6767505	21 11.2	285 5 13.1	1 40 2.9	.8620217
13	2 31 4.73	12 6 6.0	.6834727	21 9.7	286 40 4.6	1 44 54.3	.8620554
14	2 33 31.92	N.12 13 1.7	9.6901403	21 8.3	288 14 55.8	S.1 49 40.9	9.8620871
15	2 36 3.50	12 20 29.3	.6967510	21 6.9	289 49 46.6	1 54 22.5	.8621166
16	2 38 39.33	12 28 27.0	.7033027	21 5.6	291 24 37.2	1 58 58.8	.8621440
17	2 41 19.27	12 36 53.1	.7097939	21 4.4	292 59 27.6	2 3 29.7	.8621693
18	2 44 3.20	12 45 45.7	.7162233	21 3.3	294 34 17.9	2 7 54.9	.8621923
19	2 46 51.00	12 55 3.1	.7225895	21 2.2	296 9 8.2	2 12 14.2	.8622132
20	2 49 42.56	N.13 4 43.6	9.7288912	21 1.2	297 43 58.5	S.2 16 27.5	9.8622319
21	2 52 37.75	13 14 45.3	.7351277	21 0.2	299 18 48.9	2 20 34.5	.8622483
22	2 55 36.47	13 25 6.7	.7412985	20 59.3	300 53 39.4	2 24 35.1	.8622625
23	2 58 38.62	13 35 46.3	.7474030	20 58.4	302 28 30.2	2 28 29.1	.8622745
24	3 1 44.10	13 46 42.3	.7534408	20 57.6	304 3 21.2	2 32 16.3	.8622824
25	3 4 52.82	13 57 53.3	.7594119	20 56.9	305 38 12.5	2 35 56.5	.8622917
26	3 8 4.68	N.14 9 17.7	9.7653163	20 56.2	307 13 4.2	S.2 39 29.6	9.8622968
27	3 11 19.61	14 20 53.8	.7711542	20 55.5	308 47 56.3	2 42 55.4	.8622997
28	3 14 37.51	14 32 40.4	.7769260	20 54.9	310 22 48.9	2 46 13.8	.8623003
29	3 17 58.32	14 44 35.9	.7826322	20 54.4	311 57 42.0	2 49 24.6	.8623087
30	3 21 21.95	14 56 38.9	.7882730	20 53.9	313 32 35.8	2 52 27.7	.8623194
July 1	3 24 48.35	15 8 48.2	.7938492	20 53.4	315 7 30.1	2 55 22.9	.8623285
2	3 28 17.44	N.15 21 2.4	9.7993614	20 53.0	316 42 25.1	S.2 58 10.2	9.8623200
3	3 31 49.16	15 33 20.2	.8048102	20 52.6	318 17 20.9	3 0 49.3	.8623269
4	3 35 23.45	15 45 40.3	.8101963	20 52.2	319 52 17.4	3 3 20.1	.8623563
5	3 39 0.27	15 58 1.6	.8155204	20 51.9	321 27 14.7	3 5 42.6	.8623411
6	3 42 39.56	N.16 10 22.9	9.8207833	20 51.7	323 2 12.8	S.3 7 56.6	9.8623236

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
July 4	h m s 3 42 39.56	N. 16 10 22.9	9.8207833	h m 20 51.7	323 2 12.8	8.3 7 56.6	9.8622236
5	3 46 21.28	16 22 43.0	.8259858	20 51.5	324 37 11.9	3 10 2.1	.8622039
6	3 50 5.38	16 35 0.7	.8311285	20 51.3	326 12 11.8	3 11 58.8	.8621820
7	3 53 51.82	16 47 14.9	.8362125	20 51.2	327 47 12.7	3 13 46.8	.8621579
8	3 57 40.56	16 59 24.6	.8412382	20 51.1	329 22 14.6	3 15 26.0	.8621316
9	4 1 31.57	17 11 28.7	.8462064	20 51.0	330 57 17.5	3 16 56.2	.8621032
10	4 5 24.82	N. 17 23 26.1	9.8511179	20 51.0	332 32 21.5	8.3 18 17.4	9.8620727
11	4 9 20.27	17 35 15.8	.8559731	20 51.0	334 7 26.5	3 19 29.5	.8620400
12	4 13 17.90	17 46 56.7	.8607729	20 51.1	335 42 32.6	3 20 32.5	.8620052
13	4 17 17.64	17 58 28.2	.8655176	20 51.1	337 17 39.9	3 21 26.4	.8619684
14	4 21 19.48	18 9 48.9	.8702079	20 51.2	338 52 48.3	3 22 11.0	.8619295
15	4 25 23.38	18 20 57.9	.8748444	20 51.4	340 27 57.9	3 22 46.3	.8618886
16	4 29 29.30	N. 18 31 54.4	9.8794275	20 51.6	342 3 8.7	8.3 23 12.4	9.8618457
17	4 33 37.21	18 42 37.3	.8839577	20 51.8	343 38 20.7	3 23 29.1	.8618009
18	4 37 47.06	18 53 5.7	.8884354	20 52.1	345 13 34.0	3 23 36.5	.8617542
19	4 41 58.83	19 3 18.7	.8928611	20 52.3	346 48 48.4	3 23 34.5	.8617056
20	4 46 12.47	19 13 15.4	.8972352	20 52.7	348 24 4.2	3 23 23.2	.8616552
21	4 50 27.94	19 22 54.9	.9015584	20 53.0	349 59 21.3	3 23 2.5	.8616029
22	4 54 45.19	N. 19 32 16.3	9.9058314	20 53.4	351 34 39.7	8.3 22 32.5	9.8615489
23	4 59 4.19	19 41 18.9	.9100547	20 53.8	353 9 59.4	3 21 53.2	.8614932
24	5 3 24.87	19 50 1.8	.9142291	20 54.2	354 45 20.4	3 21 4.5	.8614358
25	5 7 47.21	19 58 24.2	.9183552	20 54.6	356 20 42.8	3 20 6.6	.8613768
26	5 12 11.15	20 6 25.3	.9224337	20 55.1	357 56 6.6	3 18 59.5	.8613161
27	5 16 36.66	20 14 4.4	.9264654	20 55.6	359 31 31.8	3 17 43.1	.8612539
28	5 21 3.68	N. 20 21 20.8	9.9304510	20 56.2	1 6 58.4	8.3 16 17.6	9.8611902
29	5 25 32.20	20 28 13.7	.9343911	20 56.7	2 42 26.4	3 14 43.0	.8611250
30	5 30 2.15	20 34 42.5	.9382866	20 57.3	4 17 55.8	3 12 59.4	.8610584
31	5 34 33.48	20 40 46.4	.9421380	20 57.9	5 53 26.7	3 11 6.8	.8609905
Aug. 1	5 39 6.15	20 46 24.9	.9459461	20 58.5	7 28 59.0	3 9 5.4	.8609213
2	5 43 40.13	20 51 37.4	.9497116	20 59.2	9 432.8	3 6 55.2	.8608508
3	5 48 15.36	N. 20 56 23.2	9.9534351	20 59.8	10 40 8.0	8.3 4 36.3	9.8607790
4	5 52 51.81	21 0 41.8	.9571172	21 0.5	12 15 44.7	3 2 8.8	.8607061
5	5 57 29.43	21 4 32.7	.9607586	21 1.2	13 51 22.9	2 59 32.8	.8606321
6	6 2 8.18	21 7 55.4	.9643600	21 1.9	15 27 2.6	2 56 48.4	.8605571
7	6 6 48.02	21 10 49.3	.9679219	21 2.6	17 2 43.8	2 53 55.7	.8604811
8	6 11 28.90	21 13 14.1	.9714450	21 3.4	18 38 26.6	2 50 54.9	.8604042
9	6 16 10.78	N. 21 15 9.1	9.9749298	21 4.2	20 14 10.8	8.2 47 46.1	9.8603264
10	6 20 53.62	21 16 34.1	.9783768	21 5.0	21 49 56.6	2 44 29.5	.8602478
11	6 25 37.36	21 17 28.5	.9817863	21 5.8	23 25 44.0	2 41 5.1	.8601685
12	6 30 21.97	21 17 52.1	.9851587	21 6.6	25 1 32.9	2 37 33.2	.8600886
13	6 35 7.40	21 17 44.5	.9884944	21 7.4	26 37 23.4	2 33 53.8	.8600080
14	6 39 53.59	21 17 5.3	.9917936	21 8.3	28 13 15.5	2 30 7.2	.8599268
15	6 44 40.50	N. 21 15 54.2	9.9950566	21 9.1	29 49 9.1	8.2 26 13.5	9.8598452
16	6 49 28.08	21 14 11.2	.9982837	21 10.0	31 25 4.4	2 22 12.9	.8597631
17	6 54 16.28	21 11 55.6	0.0014751	21 10.8	33 1 1.3	2 18 5.6	.8596807
18	6 59 5.04	21 9 7.4	.0046313	21 11.7	34 36 59.8	2 13 51.8	.8595980
19	7 3 54.31	N. 21 5 46.3	0.0077526	21 12.6	36 13.0	8.2 9 31.6	9.8595150

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Aug. 19	h m s	° ' "		h m	° ' "	° ' "	
	7 3 54.31	N. 21 5 46.3	0.0077526	21 12.6	36 13 0.0	8.2 9 31.6	9.8595150
	7 8 44.03	21 1 52.2	0.0108395	21 13.5	37 49 1.8	2 5 5.2	8.594319
	7 13 34.15	20 57 25.0	0.0138923	21 14.4	39 25 5.3	2 0 32.9	8.593487
	7 18 24.62	20 52 24.6	0.0169114	21 15.3	41 1 10.4	1 55 54.8	8.592654
	7 23 15.39	20 46 50.8	0.0198970	21 16.2	42 37 17.2	1 51 11.2	8.591821
	7 28 6.40	20 40 43.7	0.0228497	21 17.1	44 13 25.8	1 46 22.3	8.590989
	7 32 57.60	N. 20 34 3.2	0.0257699	21 18.0	45 49 36.0	8.1 41 28.2	9.8590159
	7 37 48.95	20 26 49.4	0.0286581	21 18.9	47 25 47.9	1 36 49.3	8.589331
	7 42 40.39	20 19 2.2	0.0315146	21 19.8	49 2 1.5	1 31 25.8	8.588506
	7 47 31.89	20 10 41.6	0.0343398	21 20.8	50 38 16.9	1 26 17.8	8.587684
Sept. 1	7 52 23.38	20 1 47.9	0.0371343	21 21.7	52 14 34.0	1 21 5.6	8.586866
	7 57 14.84	19 52 21.1	0.0398985	21 22.6	53 50 52.9	1 15 49.5	8.586053
	8 2 6.21	N. 19 42 21.3	0.0426328	21 23.5	55 27 13.5	8.1 10 29.7	9.8585246
	8 6 57.47	19 31 48.6	0.0453375	21 24.4	57 3 36.0	1 5 6.5	8.584445
	8 11 48.57	19 20 43.4	0.0480132	21 25.3	58 40 0.2	0 59 40.1	8.583650
	8 16 39.48	19 9 5.7	0.0506602	21 26.2	60 16 26.2	0 54 10.8	8.582862
	8 21 30.16	18 56 55.7	0.0532791	21 27.1	61 52 53.9	0 48 38.8	8.582083
	8 26 20.59	18 44 14.0	0.0558701	21 28.0	63 29 23.5	0 43 4.4	8.581312
	8 31 10.74	N. 18 31 0.6	0.0584339	21 28.9	65 5 54.9	8.0 37 27.8	9.8580550
	8 36 0.57	18 17 15.7	0.0609706	21 29.8	66 42 28.1	0 31 49.3	8.579798
	8 40 50.07	18 2 59.8	0.0634806	21 30.7	68 19 3.1	0 26 9.2	8.579056
Oct. 1	8 45 39.20	17 48 13.0	0.0659639	21 31.5	69 55 40.0	0 20 27.7	8.578326
	8 50 27.96	17 32 55.8	0.0684209	21 32.4	71 32 18.7	0 14 45.2	8.577607
	8 55 16.32	17 17 8.5	0.0708517	21 33.3	73 8 59.1	0 9 1.8	8.576900
	9 0 4.25	N. 17 0 51.4	0.0732564	21 34.1	74 45 41.4	8.0 3 17.9	9.8576206
	9 4 51.75	16 44 5.1	0.0756352	21 35.0	76 22 25.5	N. 0 2 26.2	8.575525
	9 9 38.79	16 26 49.8	0.0779883	21 35.8	77 59 11.4	0 8 10.4	8.574858
	9 14 25.36	16 9 6.1	0.0803157	21 36.6	79 35 59.2	0 13 54.3	8.574206
	9 19 11.44	15 50 54.3	0.0826178	21 37.4	81 12 48.8	0 19 37.6	8.573569
	9 23 57.02	15 32 14.9	0.0848946	21 38.2	82 49 40.1	0 25 20.1	8.572948
	9 28 42.08	N. 15 13 8.5	0.0871465	21 39.0	84 26 33.2	N. 0 31 1.5	9.8572342
	9 33 26.62	14 53 35.5	0.0893736	21 39.8	86 3 28.1	0 36 41.5	8.571753
Oct. 2	9 38 10.62	14 33 36.5	0.0915762	21 40.6	87 40 24.8	0 42 19.8	8.571181
	9 42 54.07	14 13 11.9	0.0937543	21 41.4	89 17 23.2	0 47 56.1	8.570626
	9 47 36.98	13 52 22.4	0.0959083	21 42.2	90 54 23.3	0 53 30.3	8.570089
	9 52 19.33	13 31 8.5	0.0980384	21 42.9	92 31 25.2	0 59 2.0	8.569570
	9 57 1.13	N. 13 9 30.8	0.1001448	21 43.6	94 8 28.7	N. 1 4 31.0	9.8569070
	10 1 42.38	12 47 29.8	0.1022278	21 44.4	95 45 33.9	1 9 57.0	8.568589
	10 6 23.07	12 25 6.2	0.1042876	21 45.1	97 22 40.7	1 15 19.6	8.568128
	10 11 3.22	12 2 20.5	0.1063244	21 45.8	98 59 49.1	1 20 38.7	8.567686
	10 15 42.82	11 39 13.3	0.1083387	21 46.5	100 36 59.1	1 25 54.1	8.567265
	10 20 21.88	11 15 45.3	0.1103305	21 47.3	102 14 10.6	1 31 5.3	8.566865
	10 25 0.42	N. 10 51 57.1	0.1123004	21 47.9	103 51 23.7	N. 1 36 12.3	9.8566486
Oct. 3	10 29 38.45	10 27 49.2	0.1142485	21 48.6	105 28 38.2	1 41 14.7	8.566127
	10 34 15.98	10 3 22.4	0.1161752	21 49.3	107 5 54.2	1 46 12.3	8.565791
	10 38 53.03	9 38 37.1	0.1180809	21 50.0	108 43 11.6	1 51 4.8	8.565476
	10 43 29.62	N. 9 13 34.2	0.1199658	21 50.6	110 20 30.3	N. 1 55 52.0	9.8565183

MEAN TIME.

Month and Day.	Apparent Right Ascension.			Apparent Declination.			Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.
	Noon.			Noon.			Noon.				Noon.			Noon.			
Oct.	4	h	m	s	N.	9	13	34.2	0.1199658	21	50.6	110 20 30.3	N.1	55 52.0	9.8565183		
	5	10	48	5.76		8	48	14.3	0.1218302	21	51.3	111 57 50.3	2	0 33.7	8.564913		
	6	10	52	41.48		8	22	38.0	0.1236743	21	51.9	113 35 11.6	2	5 9.7	8.564665		
	7	10	57	16.80		7	56	45.9	0.1254981	21	52.6	115 12 34.0	2	9 39.6	8.564440		
	8	11	1	51.75		7	30	38.7	0.1273020	21	53.2	116 49 57.6	2	14 3.3	8.564238		
	9	11	6	26.36		7	4	16.9	0.1290860	21	53.8	118 27 22.4	2	18 20.6	8.564059		
	10	11	11	0.65	N.	6	37	41.3	0.1308503	21	54.5	120 4 48.1	N.2	22 31.3	9.8563904		
	11	11	15	34.64		6	10	52.4	0.1325948	21	55.1	121 42 14.8	2	26 35.2	8.563773		
	12	11	20	8.37		5	43	51.0	0.1343197	21	55.7	123 19 42.4	2	30 32.0	8.563664		
	13	11	24	41.85		5	16	37.8	0.1360250	21	56.3	124 57 10.8	2	34 21.5	8.563579		
	14	11	29	15.12		4	49	13.4	0.1377110	21	56.9	126 34 40.0	2	38 3.7	8.563518		
	15	11	33	48.21		4	21	38.6	0.1393776	21	57.5	128 12 9.9	2	41 38.2	8.563481		
	16	11	38	21.14	N.	3	53	54.0	0.1410250	21	58.1	129 49 40.5	N.2	45 5.0	9.8563468		
	17	11	42	53.94		3	26	0.3	0.1426534	21	58.7	131 27 11.6	2	48 23.8	8.563478		
	18	11	47	26.64		2	57	58.3	0.1442629	21	59.3	133 4 43.1	2	51 34.4	8.563512		
	19	11	51	59.27		2	29	48.6	0.1458535	21	59.9	134 42 15.1	2	54 36.8	8.563570		
	20	11	56	31.86		2	1	32.0	0.1474254	22	0.5	136 19 47.4	2	57 30.8	8.563652		
	21	12	1	4.44		1	33	9.1	0.1489786	22	1.1	137 57 20.0	3	0 16.2	8.563757		
	22	12	5	37.04	N.	1	4	40.8	0.1505132	22	1.7	139 34 52.8	N.3	2 52.9	9.8563886		
	23	12	10	9.70		0	36	7.7	0.1520294	22	2.3	141 12 25.6	3	5 20.7	8.564038		
	24	12	14	42.44	N.	0	7	30.5	0.1535273	22	2.9	142 49 58.4	3	7 39.6	8.564214		
	25	12	19	15.30	S.	0	21	9.8	0.1550070	22	3.6	144 27 31.1	3	9 49.5	8.564412		
	26	12	23	48.32		0	49	52.7	0.1564688	22	4.2	146 5 3.7	3	11 50.2	8.564634		
	27	12	28	21.51		1	18	37.4	0.1579129	22	4.8	147 42 36.0	3	13 41.6	8.564879		
	28	12	32	54.92	S.	1	47	23.2	0.1593395	22	5.4	149 20 8.0	N.3	15 23.7	9.8565146		
	29	12	37	28.58		2	16	9.1	0.1607489	22	6.0	150 57 39.5	3	16 56.3	8.565435		
	30	12	42	2.53		2	44	54.7	0.1621413	22	6.6	152 35 10.5	3	18 19.5	8.565746		
	31	12	46	36.79		3	13	39.0	0.1635170	22	7.3	154 12 40.9	3	19 33.1	8.566080		
	Nov.	1	12	51	11.41		3	42	21.4	0.1648763	22	7.9	155 50 10.6	3	20 37.1	8.566435	
		2	12	55	46.43		4	11	1.1	0.1662193	22	8.6	157 27 39.5	3	21 31.4	8.566812	
		3	13	0	21.89	S.	4	39	37.3	0.1675462	22	9.2	159 5 7.5	N.3	22 16.0	9.8567209	
4		13	4	57.82		5	8	9.3	0.1688570	22	9.9	160 42 34.6	3	22 50.9	8.567627		
5		13	9	34.26		5	36	36.5	0.1701521	22	10.6	162 20 0.6	3	23 16.0	8.568065		
6		13	14	11.26		6	4	58.0	0.1714314	22	11.3	163 57 25.5	3	23 31.3	8.568523		
7		13	18	48.85		6	33	13.1	0.1726952	22	12.0	165 34 49.1	3	23 36.9	8.569001		
8		13	23	27.05		7	1	21.0	0.1739434	22	12.7	167 12 11.5	3	23 32.6	8.569498		
9		13	28	5.91	S.	7	29	21.0	0.1751762	22	13.4	168 49 32.5	N.3	23 18.6	9.8570014		
10		13	32	45.47		7	57	12.3	0.1763936	22	14.1	170 26 52.0	3	22 54.8	8.570548		
11		13	37	25.76		8	24	54.1	0.1775958	22	14.8	172 4 9.9	3	22 21.3	8.571100		
12		13	42	6.81		8	52	25.7	0.1787827	22	15.6	173 41 26.2	3	21 38.2	8.571670		
13		13	46	48.66		9	19	46.3	0.1799545	22	16.4	175 18 40.8	3	20 45.4	8.572257		
14		13	51	31.34		9	46	55.0	0.1811111	22	17.2	176 55 53.6	3	19 43.0	8.572860		
15		13	56	14.88	S.	10	13	51.1	0.1822527	22	17.9	178 33 4.5	N.3	18 31.0	9.8573479		
16		14	0	59.31		10	40	33.8	0.1833793	22	18.7	180 10 13.5	3	17 9.6	8.574113		
17		14	5	44.65		11	7	2.4	0.1844910	22	19.6	181 47 20.5	3	15 38.8	8.574763		
18		14	10	30.93		11	33	15.9	0.1855879	22	20.4	183 24 25.4	3	13 58.7	8.575427		
19		14	15	18.19	S.	11	59	13.6	0.1866698	22	21.3	185 1 28.2	N.3	12 9.3	9.8576105		

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.	Heliocentric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 19	h m s 14 15 18.19	S. 11 59 13.6	0.1866698	h m 22 21.3	185 1 28.2	N. 3 12 9.3	9.8576105
20	14 20 6.44	12 24 54.6	.1877370	22 22.2	186 38 28.8	3 10 10.8	.8576797
21	14 24 55.72	12 50 18.2	.1887894	22 23.1	188 15 27.1	3 8 3.3	.8577501
22	14 29 46.04	13 15 23.6	.1898271	22 24.0	189 52 23.1	3 5 46.9	.8578218
23	14 34 37.42	13 40 9.8	.1908504	22 24.9	191 29 16.8	3 3 21.7	.8578946
24	14 39 29.87	14 4 36.2	.1918592	22 25.9	193 6 8.0	3 0 47.9	.8579685
25	14 44 23.42	S. 14 28 41.9	0.1928537	22 26.8	194 42 56.8	N. 2 58 5.5	9.8580435
26	14 49 18.07	14 52 26.0	.1938341	22 27.8	196 19 43.1	2 55 14.7	.8581195
27	14 54 13.84	15 15 47.6	.1948007	22 28.8	197 56 26.9	2 52 15.6	.8581964
28	14 59 10.76	15 38 46.3	.1957537	22 29.8	199 33 8.0	2 49 8.4	.8582741
29	15 4 8.83	16 1 20.9	.1966934	22 30.9	201 9 46.6	2 45 53.3	.8583527
30	15 9 8.05	16 23 30.8	.1976198	22 32.0	202 46 22.5	2 42 30.4	.8584320
Dec. 1	15 14 8.45	S. 16 45 15.2	0.1985332	22 33.0	204 22 55.7	N. 2 39 0.0	9.8585120
2	15 19 10.03	17 6 33.3	.1994335	22 34.1	205 59 26.3	2 35 22.0	.8585926
3	15 24 12.80	17 27 24.3	.2003210	22 35.2	207 35 54.1	2 31 36.8	.8586738
4	15 29 16.76	17 47 47.5	.2011956	22 36.4	209 13 19.2	2 27 44.5	.8587554
5	15 34 21.91	18 7 42.1	.2020576	22 37.6	210 48 41.5	2 23 45.4	.8588375
6	15 39 28.25	18 27 7.4	.2029071	22 38.7	212 25 1.1	2 19 39.6	.8589199
7	15 44 35.79	S. 18 46 2.6	0.2037443	22 39.9	214 1 17.9	N. 2 15 27.4	9.8590027
8	15 49 44.52	19 4 26.9	.2045690	22 41.2	215 37 32.0	2 11 8.9	.8590856
9	15 54 54.43	19 22 19.7	.2053815	22 42.4	217 13 43.3	2 6 44.3	.8591687
10	16 0 5.51	19 39 40.3	.2061818	22 43.7	218 49 51.8	2 2 13.9	.8592520
11	16 5 17.73	19 56 27.9	.2069698	22 45.0	220 25 57.6	1 57 37.9	.8593353
12	16 10 31.09	20 12 41.8	.2077456	22 46.3	222 2 0.6	1 52 56.4	.8594185
13	16 15 45.58	S. 20 28 21.4	0.2085093	22 47.6	223 38 0.9	N. 1 48 9.8	9.8595016
14	16 21 1.17	20 43 26.0	.2092608	22 48.9	225 13 58.5	1 43 18.2	.8595846
15	16 26 17.83	20 57 54.9	.2100003	22 50.3	226 49 53.4	1 38 22.0	.8596674
16	16 31 35.54	21 11 47.6	.2107277	22 51.6	228 25 45.6	1 33 21.3	.8597499
17	16 36 54.27	21 25 3.3	.2114430	22 53.0	230 1 35.2	1 28 16.3	.8598320
18	16 42 13.98	21 37 41.6	.2121462	22 54.4	231 37 22.2	1 23 7.3	.8599136
19	16 47 34.64	S. 21 49 41.8	0.2128372	22 55.8	233 13 6.6	N. 1 17 54.5	9.8599948
20	16 52 56.21	22 1 3.4	.2135161	22 57.3	234 48 48.5	1 12 38.3	.8600755
21	16 58 18.64	22 11 45.7	.2141830	22 58.7	236 24 27.9	1 7 18.8	.8601555
22	17 3 41.89	22 21 48.4	.2148379	23 0.2	238 0 4.9	1 1 56.3	.8602349
23	17 9 5.92	22 31 10.9	.2154810	23 1.6	239 35 39.4	0 56 31.0	.8603135
24	17 14 30.66	22 39 52.8	.2161123	23 3.1	241 11 11.6	0 51 3.2	.8603914
25	17 19 56.07	S. 22 47 53.7	0.2167320	23 4.6	242 46 41.4	N. 0 45 33.2	9.8604684
26	17 25 22.10	22 55 13.1	.2173401	23 6.1	244 22 9.0	0 40 1.3	.8605445
27	17 30 48.68	23 1 50.8	.2179368	23 7.6	245 57 34.4	0 34 27.6	.8606197
28	17 36 15.77	23 7 46.3	.2185221	23 9.1	247 32 57.6	0 28 52.3	.8606938
29	17 41 43.31	23 12 59.4	.2190963	23 10.7	249 8 18.8	0 23 15.9	.8607668
30	17 47 11.25	23 17 29.8	.2196596	23 12.2	250 43 37.9	0 17 38.5	.8608388
31	17 52 39.53	S. 23 21 17.2	0.2202122	23 13.7	252 18 55.0	N. 0 12 0.4	9.8609095
32	17 58 8.09	S. 23 24 21.5	0.2207539	23 15.3	253 54 10.2	N. 0 6 21.8	9.8609790

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Jan. 1	h m s 21 45 32.13	S. 14 40 17.8	0.2890864	h m 3 0.1	352 12 56.5	S. 1 32 34.1	0.1422571
2	21 48 33.82	14 24 6.5	.2901732	2 59.2	352 50 41.3	1 31 53.4	.1423866
3	21 51 35.08	14 7 47.0	.2912568	2 58.3	353 28 24.7	1 31 12.0	.1425204
4	21 54 35.91	13 51 19.4	.2923374	2 57.3	354 6 6.6	1 30 30.0	.1426583
5	21 57 36.32	13 34 44.0	.2934150	2 56.4	354 43 47.1	1 29 47.4	.1428004
6	22 0 36.30	13 18 1.1	.2944895	2 55.5	355 21 26.1	1 29 4.2	.1429466
7	22 3 35.86	S. 13 1 10.9	0.2955610	2 54.5	355 59 3.5	S. 1 28 20.4	0.1430970
8	22 6 34.99	12 44 13.6	.2966295	2 53.6	356 36 39.2	1 27 36.0	.1432514
9	22 9 33.70	12 27 9.4	.2976950	2 52.6	357 14 13.4	1 26 51.0	.1434099
10	22 12 32.00	12 9 58.5	.2987576	2 51.6	357 51 45.8	1 26 5.4	.1435724
11	22 15 29.88	11 52 41.1	.2998173	2 50.6	358 29 16.5	1 25 19.2	.1437389
12	22 18 27.36	11 35 17.4	.3008741	2 49.7	359 6 45.4	1 24 32.5	.1439094
13	22 21 24.43	S. 11 17 47.6	0.3019281	2 48.7	359 44 12.5	S. 1 23 45.1	0.1440838
14	22 24 21.11	11 0 12.0	.3029794	2 47.7	0 21 37.8	1 22 57.2	.1442621
15	22 27 17.39	10 42 30.7	.3040280	2 46.7	0 59 1.2	1 22 8.8	.1444443
16	22 30 13.29	10 24 44.0	.3050740	2 45.7	1 36 22.7	1 21 19.8	.1446304
17	22 33 8.80	10 6 52.1	.3061173	2 44.6	2 13 42.2	1 20 30.3	.1448203
18	22 36 3.94	9 48 55.1	.3071579	2 43.6	2 50 59.7	1 19 40.3	.1450140
19	22 38 58.71	S. 9 30 53.3	0.3081960	2 42.6	3 28 15.2	S. 1 18 49.7	0.1452114
20	22 41 53.13	9 12 46.8	.3092314	2 41.5	4 5 28.5	1 17 58.7	.1454126
21	22 44 47.20	8 54 35.9	.3102641	2 40.5	4 42 39.8	1 17 7.1	.1456175
22	22 47 40.92	8 36 20.8	.3112942	2 39.5	5 19 48.9	1 16 15.0	.1458261
23	22 50 34.31	8 18 1.6	.3123216	2 38.4	5 56 55.8	1 15 22.5	.1460383
24	22 53 27.39	7 59 38.6	.3133463	2 37.4	6 34 0.5	1 14 29.5	.1462541
25	22 56 20.15	S. 7 41 11.9	0.3143681	2 36.3	7 11 3.0	S. 1 13 36.0	0.1464734
26	22 59 12.60	7 22 41.7	.3153869	2 35.2	7 48 3.2	1 12 42.1	.1466963
27	23 2 4.75	7 4 8.2	.3164029	2 34.2	8 25 1.0	1 11 47.7	.1469227
28	23 4 56.61	6 45 31.6	.3174158	2 33.1	9 1 56.5	1 10 52.9	.1471525
29	23 7 48.18	6 26 52.1	.3184256	2 32.0	9 38 49.6	1 9 57.6	.1473858
30	23 10 39.47	6 8 9.9	.3194320	2 30.9	10 15 40.3	1 9 1.9	.1476224
31	23 13 30.50	S. 5 49 25.2	0.3204349	2 29.8	10 52 28.5	S. 1 8 5.9	0.1478624
Feb. 1	23 16 21.26	5 30 38.3	.3214344	2 28.7	11 29 14.2	1 7 9.4	.1481057
2	23 19 11.76	5 11 49.2	.3224305	2 27.6	12 5 57.4	1 6 12.5	.1483523
3	23 22 2.00	4 52 58.3	.3234231	2 26.5	12 42 38.1	1 5 15.2	.1486021
4	23 24 51.99	4 34 5.7	.3244120	2 25.4	13 19 16.2	1 4 17.6	.1488551
5	23 27 41.73	4 15 11.6	.3253973	2 24.3	13 55 51.7	1 3 19.5	.1491113
6	23 30 31.24	S. 3 56 16.3	0.3263789	2 23.2	14 32 24.6	S. 1 2 21.2	0.1493706
7	23 33 20.52	3 37 20.0	.3273570	2 22.0	15 8 54.9	1 1 22.5	.1496330
8	23 36 9.58	3 18 22.7	.3283316	2 20.9	15 45 22.4	1 0 23.4	.1498984
9	23 38 58.41	2 59 24.7	.3293028	2 19.8	16 21 47.2	0 59 24.0	.1501669
10	23 41 47.03	2 40 26.2	.3302704	2 18.6	16 58 9.3	0 58 24.3	.1504383
11	23 44 35.46	2 21 27.3	.3312346	2 17.5	17 34 28.7	0 57 24.2	.1507126
12	23 47 23.70	S. 2 2 28.3	0.3321953	2 16.4	18 10 45.3	S. 0 56 23.9	0.1509898
13	23 50 11.75	1 43 29.5	.3331525	2 15.2	18 46 59.0	0 55 23.2	.1512699
14	23 52 59.63	1 24 30.9	.3341062	2 14.1	19 23 9.9	0 54 22.3	.1515528
15	23 55 47.35	1 5 32.7	.3350564	2 13.0	19 59 17.9	0 53 21.0	.1518385
16	23 58 34.90	S. 0 46 35.1	0.3360032	2 11.8	20 35 23.1	S. 0 52 19.5	0.1521269

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Feb. 16	^{h m s} 23 58 34.90	^{° ' "} S. 0 46 35.1	0.3360032	^{h m} 2 11.8	^{° ' "} 20 35 23.1	^{° ' "} 8.0 52 19.5	0.1521269
17	0 1 22.31	0 27 38.3	.3369465	2 10.7	21 11 25.3	0 51 17.7	.15242180
18	0 4 9.58	S. 0 8 42.4	.3378863	2 9.5	21 47 24.6	0 50 15.7	.1527117
19	0 6 56.72	N. 0 10 12.4	.3388227	2 8.3	22 23 21.0	0 49 13.4	.1530080
20	0 9 43.75	0 29 6.0	.3397558	2 7.2	22 59 14.3	0 48 10.9	.1533069
21	0 12 30.68	0 47 58.1	.3406853	2 6.0	23 35 4.7	0 47 8.2	.1536083
22	0 15 17.50	N. 1 6 48.6	0.3416112	2 4.9	24 10 52.1	8.0 46 5.2	0.1539122
23	0 18 4.24	1 25 37.3	.3425333	2 3.7	24 46 36.5	0 45 2.1	.1542186
24	0 20 50.90	1 44 24.1	.3434516	2 2.5	25 22 17.8	0 43 58.7	.1545273
25	0 23 37.49	2 3 8.8	.3443660	2 1.4	25 57 56.0	0 42 55.1	.1548384
26	0 26 24.01	2 21 51.3	.3452764	2 0.2	26 33 31.1	0 41 51.4	.1551518
27	0 29 10.49	2 40 31.4	.3461826	1 59.1	27 9 3.1	0 40 47.5	.1554674
28	0 31 56.92	N. 2 59 8.9	0.3470845	1 57.9	27 44 32.0	8.0 39 43.4	0.1557853
Mar. 1	0 34 43.31	3 17 43.6	.3479820	1 56.7	28 19 57.8	0 38 39.2	.1561053
2	0 37 29.66	3 36 15.4	.3488752	1 55.5	28 55 20.4	0 37 34.8	.1564275
3	0 40 15.98	3 54 44.1	.3497639	1 54.4	29 30 39.8	0 36 30.3	.1567518
4	0 43 2.28	4 13 9.6	.3506481	1 53.2	30 5 56.1	0 35 25.6	.1570781
5	0 45 48.56	4 31 31.5	.3515276	1 52.0	30 41 9.1	0 34 20.8	.1574064
6	0 48 34.83	N. 4 49 49.9	0.3524027	1 50.9	31 16 19.0	8.0 33 15.9	0.1577367
7	0 51 21.09	5 8 4.4	.3532732	1 49.7	31 51 25.6	0 32 10.9	.1580690
8	0 54 7.35	5 26 15.0	.3541392	1 48.5	32 26 28.9	0 31 5.8	.1584031
9	0 56 53.63	5 44 21.4	.3550006	1 47.3	33 1 29.0	0 30 0.5	.1587391
10	0 59 39.92	6 2 23.6	.3558574	1 46.2	33 36 25.9	0 28 55.2	.1590769
11	1 2 26.22	6 20 21.3	.3567096	1 45.0	34 11 19.4	0 27 49.8	.1594164
12	1 5 12.55	N. 6 38 14.5	0.3575572	1 43.8	34 46 9.7	8.0 26 44.4	0.1597576
13	1 7 58.92	6 56 2.8	.3584002	1 42.7	35 20 56.6	0 25 38.8	.1601005
14	1 10 45.33	7 13 46.3	.3592386	1 41.5	35 55 40.3	0 24 33.3	.1604451
15	1 13 31.78	7 31 24.6	.3600724	1 40.3	36 30 20.6	0 23 27.7	.1607912
16	1 16 18.30	7 48 57.8	.3609015	1 39.2	37 4 57.6	0 22 22.0	.1611388
17	1 19 4.87	8 6 25.6	.3617260	1 38.0	37 39 31.2	0 21 16.4	.1614880
18	1 21 51.51	N. 8 23 47.9	0.3625459	1 36.8	38 14 1.5	8.0 20 10.7	0.1618386
19	1 24 38.23	8 41 4.5	.3633613	1 35.7	38 48 28.5	0 19 4.9	.1621907
20	1 27 25.03	8 58 15.4	.3641724	1 34.5	39 22 52.1	0 17 59.2	.1625441
21	1 30 11.93	9 15 20.3	.3649792	1 33.4	39 57 12.4	0 16 53.4	.1628989
22	1 32 58.93	9 32 19.2	.3657813	1 32.2	40 31 29.2	0 15 47.7	.1632550
23	1 35 46.04	9 49 11.9	.3665786	1 31.0	41 5 42.7	0 14 42.0	.1636123
24	1 38 33.27	N. 10 5 58.3	0.3673709	1 29.9	41 39 52.8	8.0 13 36.3	0.1639708
25	1 41 20.63	10 22 38.3	.3681582	1 28.7	42 13 59.5	0 12 30.7	.1643305
26	1 44 8.12	10 39 11.8	.3689404	1 27.6	42 48 2.7	0 11 25.1	.1646913
27	1 46 55.74	10 55 38.5	.3697174	1 26.4	43 22 2.6	0 10 19.5	.1650532
28	1 49 43.50	11 11 58.5	.3704891	1 25.3	43 55 59.1	0 9 14.0	.1654162
29	1 52 31.40	11 28 11.5	.3712554	1 24.2	44 29 52.2	0 8 8.5	.1657802
30	1 55 19.45	N. 11 44 17.4	0.3720163	1 23.0	45 3 41.9	8.0 7 3.1	0.1661451
31	1 58 7.64	12 0 15.9	.3727715	1 21.9	45 37 28.1	0 5 57.8	.1665110
Apr. 1	2 0 55.99	12 16 7.0	.3735210	1 20.7	46 11 10.9	0 4 52.5	.1668778
2	2 3 44.50	12 31 50.4	.3742649	1 19.6	46 44 50.4	0 3 47.3	.1672454
3	2 6 33.16	N. 12 47 26.2	0.3750032	1 18.5	47 18 26.4	8.0 2 42.2	0.1676138

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Apr. 3	h m s 2 6 33.16	N.12 47 26.2	0.3750032	h m 1 18.5	47 18 26.4	S.0 2 42.2	0.1676138
4	2 9 21.97	13 2 54.1	0.3757358	1 17.3	47 51 59.0	0 1 37.2	0.1679830
5	2 12 10.94	13 18 14.1	0.3764629	1 16.2	48 25 28.2	S.0 0 32.3	0.1683529
6	2 15 0.08	13 33 26.1	0.3771843	1 15.1	48 58 53.9	N.0 0 32.5	0.1687236
7	2 17 49.39	13 48 29.8	0.3779000	1 14.0	49 32 16.2	0 1 37.2	0.1690929
8	2 20 38.87	14 3 25.1	0.3786100	1 12.8	50 5 53.1	0 2 41.7	0.1694660
9	2 23 28.52	N.14 18 12.0	0.3793141	1 11.7	50 38 50.5	N.0 3 46.1	0.1698393
10	2 26 18.35	14 32 50.1	0.3800124	1 10.6	51 12 2.6	0 4 50.4	0.1702123
11	2 29 8.35	14 47 19.6	0.3807049	1 9.5	51 45 11.2	0 5 54.6	0.1705859
12	2 31 58.52	15 1 40.2	0.3813917	1 8.4	52 18 16.4	0 6 58.6	0.1709599
13	2 34 48.87	15 15 51.8	0.3820728	1 7.3	52 51 18.2	0 8 2.5	0.1713343
14	2 37 39.40	15 29 54.3	0.3827482	1 6.2	53 24 16.6	0 9 6.3	0.1717091
15	2 40 30.12	N.15 43 47.6	0.3834178	1 5.1	53 57 11.6	N.0 10 9.9	0.1720842
16	2 43 21.04	15 57 31.5	0.3840818	1 4.0	54 30 3.1	0 11 13.2	0.1724596
17	2 46 12.16	16 11 6.0	0.3847403	1 2.9	55 2 51.3	0 12 16.4	0.1728353
18	2 49 3.47	16 24 31.0	0.3853930	1 1.8	55 35 36.1	0 13 19.5	0.1732113
19	2 51 54.98	16 37 46.4	0.3860399	1 0.8	56 8 17.4	0 14 22.3	0.1735875
20	2 54 46.69	16 50 52.1	0.3866810	0 59.7	56 40 55.4	0 15 25.0	0.1739639
21	2 57 38.61	N.17 3 47.9	0.3873162	0 58.6	57 13 30.1	N.0 16 27.5	0.1743403
22	3 0 30.74	17 16 33.8	0.3879453	0 57.5	57 46 1.3	0 17 29.8	0.1747163
23	3 3 23.07	17 29 9.7	0.3885683	0 56.5	58 18 29.2	0 18 31.8	0.1750935
24	3 6 15.61	17 41 35.5	0.3891850	0 55.4	58 50 53.7	0 19 33.7	0.1754702
25	3 9 8.36	17 53 51.1	0.3897953	0 54.3	59 23 14.8	0 20 35.4	0.1758469
26	3 12 1.31	18 5 56.4	0.3903992	0 53.3	59 55 32.6	0 21 36.8	0.1762235
27	3 14 54.46	N.18 17 51.2	0.3909967	0 52.2	60 27 47.0	N.0 22 38.1	0.1766001
28	3 17 47.82	18 29 35.5	0.3915875	0 51.2	60 59 58.1	0 23 39.1	0.1769765
29	3 20 41.38	18 41 9.2	0.3921717	0 50.1	61 32 5.9	0 24 39.9	0.1773528
30	3 23 35.13	18 52 32.1	0.3927491	0 49.1	62 4 10.3	0 25 40.4	0.1777290
May 1	3 26 29.08	19 3 44.1	0.3933199	0 48.0	62 36 11.4	0 26 40.7	0.1781049
2	3 29 23.21	19 14 45.3	0.3938839	0 47.0	63 8 9.2	0 27 40.8	0.1784807
3	3 32 17.53	N.19 25 35.4	0.3944411	0 45.9	63 40 3.7	N.0 28 40.6	0.1788561
4	3 35 12.04	19 36 14.5	0.3949915	0 44.9	64 12 54.9	0 29 40.2	0.1792313
5	3 38 6.73	19 46 42.3	0.3955351	0 43.9	64 43 42.8	0 30 39.5	0.1796061
6	3 41 1.59	19 56 58.9	0.3960718	0 42.9	65 15 27.4	0 31 38.5	0.1799805
7	3 43 56.62	20 7 4.1	0.3966016	0 41.8	65 47 8.8	0 32 37.3	0.1803546
8	3 46 51.81	20 16 57.8	0.3971246	0 40.8	66 18 46.9	0 33 35.9	0.1807282
9	3 49 47.17	N.20 26 40.0	0.3976407	0 39.8	66 50 21.7	N.0 34 34.1	0.1811014
10	3 52 42.69	20 36 10.5	0.3981500	0 38.8	67 21 53.4	0 35 32.1	0.1814740
11	3 55 38.36	20 45 29.4	0.3986524	0 37.8	67 53 21.8	0 36 29.8	0.1818461
12	3 58 34.18	20 54 36.4	0.3991480	0 36.8	68 24 47.0	0 37 27.2	0.1822177
13	4 1 30.15	21 3 31.7	0.3996368	0 35.8	68 56 8.9	0 38 24.4	0.1825887
14	4 4 26.26	21 12 15.1	0.4001187	0 34.8	69 27 27.7	0 39 21.2	0.1829591
15	4 7 22.52	N.21 20 46.6	0.4005940	0 33.8	69 58 43.2	N.0 40 17.8	0.1833289
16	4 10 18.93	21 29 6.1	0.4010626	0 32.8	70 29 55.6	0 41 14.0	0.1836980
17	4 13 15.47	21 37 13.5	0.4015243	0 31.8	71 1 4.9	0 42 10.0	0.1840664
18	4 16 12.13	21 45 8.9	0.4019790	0 30.8	71 32 11.0	0 43 5.7	0.1844341
19	4 19 8.92	N.21 52 52.1	0.4024267	0 29.8	72 3 13.9	N.0 44 1.0	0.1848010

MEAN TIME.

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	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May 19	h m s	° ' "	° ' "	h m	° ' "	° ' "	° ' "
19	4 19 8.02	N.21 52 52.1	0.4024267	0 29.8	72 3 13.9	N.0 44 1.0	0.1848010
20	4 22 5.85	22 0 23.1	.4028674	0 28.8	72 34 13.7	0 44 56.1	.1851672
21	4 25 2.90	22 7 41.9	.4033009	0 27.8	73 5 10.4	0 45 50.8	.1855325
22	4 28 0.06	22 14 48.3	.4037273	0 26.8	73 36 4.0	0 46 45.2	.1858971
23	4 30 57.33	22 21 42.5	.4041464	0 25.8	74 6 54.5	0 47 39.3	.1862608
24	4 33 54.70	22 28 24.2	.4045582	0 24.8	74 37 42.0	0 48 33.1	.1866236
25	4 36 52.16	N.22 34 53.6	0.4049624	0 23.8	75 8 26.3	N.0 49 26.5	0.1869855
26	4 39 49.72	22 41 10.5	.4053590	0 22.8	75 39 7.6	0 50 19.6	.1873465
27	4 42 47.35	22 47 14.9	.4057477	0 21.9	76 9 45.9	0 51 12.4	.1877065
28	4 45 45.06	22 53 6.7	.4061287	0 20.9	76 40 21.2	0 52 4.9	.1880655
29	4 48 42.83	22 58 46.0	.4065019	0 19.9	77 10 53.4	0 52 57.0	.1884235
30	4 51 40.66	23 4 12.7	.4068673	0 18.9	77 41 22.7	0 53 48.8	.1887805
31	4 54 38.53	N.23 9 26.8	0.4072249	0 17.9	78 11 48.9	N.0 54 40.3	0.1891364
June 1	4 57 36.44	23 14 28.2	.4075748	0 17.0	78 42 12.2	0 55 31.4	.1894912
2	5 0 34.37	23 19 16.9	.4079168	0 16.0	79 12 32.6	0 56 22.2	.1898450
3	5 3 32.32	23 23 52.9	.4082508	0 15.0	79 42 50.0	0 57 12.7	.1901976
4	5 6 30.28	23 28 16.2	.4085768	0 14.0	80 13 4.5	0 58 2.8	.1905491
5	5 9 28.23	23 32 26.7	.4088949	0 13.1	80 43 16.0	0 58 52.5	.1908993
6	5 12 26.17	N.23 36 24.5	0.4092050	0 12.1	81 13 24.7	N.0 59 41.9	0.1912484
7	5 15 24.09	23 40 9.4	.4095072	0 11.1	81 43 30.5	1 0 30.9	.1915963
8	5 18 21.99	23 43 41.6	.4098015	0 10.1	82 13 33.4	1 1 19.6	.1919429
9	5 21 19.84	23 47 1.0	.4100878	0 9.1	82 43 33.4	1 2 7.9	.1922883
10	5 24 17.65	23 50 7.7	.4103663	0 8.2	83 13 30.6	1 2 55.8	.1926322
11	5 27 15.42	23 53 1.6	.4106369	0 7.2	83 43 25.0	1 3 43.4	.1929751
12	5 30 13.13	N.23 55 42.8	0.4108997	0 6.2	84 13 16.6	N.1 4 30.7	0.1933165
13	5 33 10.77	23 58 11.1	.4111547	0 5.2	84 43 5.3	1 5 17.6	.1936565
14	5 36 8.34	24 0 26.8	.4114017	0 4.2	85 12 51.3	1 6 4.1	.1939952
15	5 39 5.84	24 2 29.7	.4116408	0 3.3	85 42 34.6	1 6 50.2	.1943324
16	5 42 3.25	24 4 20.0	.4118719	0 2.3	86 12 15.1	1 7 36.0	.1946683
17	5 45 0.57	24 5 57.5	.4120949	0 1.3	86 41 52.9	1 8 21.4	.1950027
18	5 47 57.79	N.24 7 22.4	0.4123097	{ 0 0.1 }	87 11 27.9	N.1 9 6.4	0.1953356
19	5 50 54.91	24 8 34.7	.4125163	23 58.3	87 41 0.3	1 9 51.1	.1956671
20	5 53 51.92	24 9 34.4	.4127146	23 57.3	88 10 29.9	1 10 35.3	.1959971
21	5 56 48.80	24 10 21.4	.4129046	23 56.3	88 39 56.9	1 11 19.2	.1963255
22	5 59 45.55	24 10 55.9	.4130860	23 55.4	89 9 21.3	1 12 2.7	.1966525
23	6 2 42.17	24 11 17.9	.4132588	23 54.4	89 38 43.0	1 12 45.9	.1969779
24	6 5 38.64	N.24 11 27.4	0.4134228	23 53.3	90 8 2.1	N.1 13 28.6	0.1973017
25	6 8 34.94	24 11 24.4	.4135781	23 52.3	90 37 18.6	1 14 11.0	.1976239
26	6 11 31.07	24 11 9.0	.4137245	23 51.3	91 6 32.6	1 14 53.0	.1979445
27	6 14 27.03	24 10 41.3	.4138621	23 50.3	91 35 43.9	1 15 34.5	.1982635
28	6 17 22.80	24 10 1.2	.4139908	23 49.3	92 4 52.7	1 16 15.7	.1985809
29	6 20 18.38	24 9 8.8	.4141105	23 48.3	92 33 59.0	1 16 56.6	.1988966
30	6 23 13.75	N.24 8 4.1	0.4142212	23 47.3	93 3 2.8	N.1 17 37.0	0.1992106
July 1	6 26 8.89	24 6 47.3	.4143229	23 46.2	93 32 4.1	1 18 17.0	.1995229
2	6 29 3.81	24 5 18.3	.4144155	23 45.2	94 1 2.9	1 18 56.7	.1998335
3	6 31 58.49	24 3 37.2	.4144990	23 44.1	94 29 59.2	1 19 35.9	.2001424

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
July 4	h m s 6 34 52.92	N.24 1 44.1	0.4145735	h m 23 43.1	0 1 58 53.1	N.1 20 14.8	0.2004496
5	6 37 47.10	23 59 38.9	0.4146389	23 42.1	95 27 44.6	1 20 53.2	0.2007550
6	6 40 41.02	23 57 21.7	0.4146952	23 41.0	95 56 33.6	1 21 31.3	0.2010586
7	6 43 34.67	23 54 52.7	0.4147425	23 40.0	96 25 20.3	1 22 9.0	0.2013604
8	6 46 28.05	23 52 12.0	0.4147808	23 38.9	96 54 4.6	1 22 46.2	0.2016605
9	6 49 21.14	23 49 19.7	0.4148101	23 37.8	97 22 46.5	1 23 23.1	0.2019587
10	6 52 13.95	N.23 46 15.9	0.4148306	23 36.8	97 51 26.1	N.1 23 59.6	0.2022551
11	6 55 6.47	23 43 0.6	0.4148421	23 35.7	98 20 3.3	1 24 35.7	0.2025496
12	6 57 58.70	23 39 33.7	0.4148445	23 34.6	98 48 38.3	1 25 11.4	0.2028423
13	7 0 50.62	23 35 55.5	0.4148379	23 33.5	99 17 11.0	1 25 46.7	0.2031331
14	7 3 42.23	23 32 5.8	0.4148222	23 32.5	99 45 41.4	1 26 21.6	0.2034220
15	7 6 33.54	23 28 4.7	0.4147973	23 31.4	100 14 9.5	1 26 56.1	0.2037089
16	7 9 24.53	N.23 23 52.5	0.4147631	23 30.3	100 42 35.4	N.1 27 30.1	0.2039940
17	7 12 15.21	23 19 29.2	0.4147195	23 29.2	101 10 59.1	1 28 3.8	0.2042771
18	7 15 5.57	23 14 54.8	0.4146665	23 28.1	101 39 20.6	1 28 37.1	0.2045583
19	7 17 55.60	23 10 9.5	0.4146039	23 26.9	102 7 39.9	1 29 10.0	0.2048376
20	7 20 45.29	23 5 13.4	0.4145317	23 25.8	102 35 57.0	1 29 48.4	0.2051148
21	7 23 34.65	23 0 6.5	0.4144498	23 24.7	103 4 12.0	1 30 14.4	0.2053901
22	7 26 23.66	N.22 54 48.8	0.4143582	23 23.6	103 32 24.9	N.1 30 46.1	0.2056634
23	7 29 12.33	22 49 20.6	0.4142566	23 22.4	104 0 35.6	1 31 17.3	0.2059347
24	7 32 0.64	22 43 41.9	0.4141451	23 21.3	104 28 44.3	1 31 48.2	0.2062039
25	7 34 48.59	22 37 52.8	0.4140236	23 20.1	104 56 50.9	1 32 18.6	0.2064711
26	7 37 36.17	22 31 53.4	0.4138919	23 19.0	105 24 55.4	1 32 48.7	0.2067363
27	7 40 23.38	22 25 43.7	0.4137500	23 17.8	105 52 57.9	1 33 18.3	0.2069994
28	7 43 10.22	N.22 19 23.9	0.4135979	23 16.6	106 20 58.4	N.1 33 47.6	0.2072605
29	7 45 56.67	22 12 54.1	0.4134356	23 15.5	106 48 56.9	1 34 16.4	0.2075194
30	7 48 42.73	22 6 14.4	0.4132631	23 14.3	107 16 53.4	1 34 44.8	0.2077763
31	7 51 28.39	21 59 24.8	0.4130803	23 13.1	107 44 48.0	1 35 12.8	0.2080310
Aug. 1	7 54 13.66	21 52 25.4	0.4128873	23 11.9	108 12 40.6	1 35 40.3	0.2082837
2	7 56 58.54	21 45 16.4	0.4126839	23 10.7	108 40 31.2	1 36 7.4	0.2085342
3	7 59 43.02	N.21 37 57.9	0.4124702	23 9.5	109 8 20.0	N.1 36 34.2	0.2087826
4	8 2 27.10	21 30 29.9	0.4122461	23 8.3	109 36 6.9	1 37 0.5	0.2090289
5	8 5 10.77	21 22 52.7	0.4120118	23 7.1	110 3 51.9	1 37 26.5	0.2092730
6	8 7 54.03	21 15 6.2	0.4117671	23 5.9	110 31 35.0	1 37 52.0	0.2095149
7	8 10 36.86	21 7 10.7	0.4115123	23 4.6	110 59 16.3	1 38 17.1	0.2097546
8	8 13 19.27	20 59 6.2	0.4112471	23 3.4	111 26 55.8	1 38 41.9	0.2099922
9	8 16 1.27	N.20 50 52.8	0.4109717	23 2.2	111 54 33.5	N.1 39 6.8	0.2102276
10	8 18 42.86	20 42 30.5	0.4106860	23 0.9	112 22 9.5	1 39 30.1	0.2104607
11	8 21 24.05	20 33 59.5	0.4103901	22 59.7	112 49 43.7	1 39 53.6	0.2106916
12	8 24 4.84	20 25 20.0	0.4100839	22 58.4	113 17 16.1	1 40 16.7	0.2109203
13	8 26 45.22	20 16 32.0	0.4097671	22 57.1	113 44 46.8	1 40 39.4	0.2111468
14	8 29 25.19	20 7 35.5	0.4094395	22 55.9	114 12 15.8	1 41 1.6	0.2113710
15	8 32 4.76	N.19 58 30.8	0.4091011	22 54.6	114 39 43.1	N.1 41 23.5	0.2115930
16	8 34 43.93	19 49 18.0	0.4087518	22 53.3	115 7 8.8	1 41 44.9	0.2118127
17	8 37 22.69	19 39 57.1	0.4083915	22 52.0	115 34 32.9	1 42 6.0	0.2120302
18	8 40 1.05	19 30 28.1	0.4080203	22 50.7	116 1 55.3	1 42 26.6	0.2122454
19	8 42 39.00	N.19 20 51.2	0.4076381	22 49.4	116 29 16.1	N.1 42 46.8	0.2124583

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Aug. 19	h m s 8 42 39.00	N. 19 20 51.2	0.4076381	h m 22 49.4	0 1 16 116 29 16.1	0 1 16 N. 1 42 46.8	0.2124583
20	8 45 16.55	19 11 6.6	.4072447	22 48.0	116 56 35.3	1 43 6.6	.2126689
21	8 47 53.69	19 1 14.3	.4068401	22 46.7	117 23 52.9	1 43 26.0	.2128772
22	8 50 30.43	18 51 14.5	.4064241	22 45.3	117 51 9.0	1 43 45.0	.2130832
23	8 53 6.76	18 41 7.3	.4059965	22 44.0	118 18 23.5	1 44 3.6	.2132869
24	8 55 42.69	18 30 52.8	.4055573	22 42.6	118 45 36.6	1 44 21.8	.2134883
25	8 58 18.20	N. 18 20 31.1	0.4051066	22 41.2	119 12 48.1	N. 1 44 39.6	0.2136873
26	9 0 53.31	18 10 2.3	.4046444	22 39.9	119 39 58.1	1 44 56.9	.2138840
27	9 3 28.00	17 59 26.5	.4041707	22 38.5	120 7 6.7	1 45 13.9	.2140784
28	9 6 2.29	17 48 43.9	.4036853	22 37.1	120 34 13.8	1 45 30.4	.2142704
29	9 8 36.17	17 37 54.6	.4031881	22 35.8	121 1 19.5	1 45 46.5	.2144600
30	9 11 9.64	17 26 58.6	.4026792	22 34.4	121 28 23.8	1 46 2.3	.2146473
Sept. 31	9 13 42.70	N. 17 15 56.1	0.4021582	22 33.0	121 55 26.8	N. 1 46 17.6	0.2148322
1	9 16 15.36	17 4 47.2	.4016252	22 31.6	122 22 28.3	1 46 32.5	.2150148
2	9 18 47.62	16 53 32.0	.4010805	22 30.2	122 49 28.5	1 46 47.0	.2151949
3	9 21 19.48	16 42 10.6	.4005241	22 28.8	123 16 27.4	1 47 1.1	.2153727
4	9 23 50.94	16 30 43.2	.3999562	22 27.3	123 43 25.0	1 47 14.8	.2155481
5	9 26 22.00	16 19 9.8	.3993764	22 25.9	124 10 21.3	1 47 28.1	.2157210
6	9 28 52.67	N. 16 7 30.5	0.3987848	22 24.5	124 37 16.3	N. 1 47 41.0	0.2158916
7	9 31 22.96	15 55 45.6	.3981816	22 23.0	125 4 10.1	1 47 53.4	.2160597
8	9 33 52.88	15 43 54.9	.3975666	22 21.6	125 31 2.6	1 48 5.5	.2162255
9	9 36 22.42	15 31 58.7	.3969397	22 20.1	125 57 54.0	1 48 17.1	.2163888
10	9 38 51.59	15 19 57.0	.3963007	22 18.6	126 24 44.1	1 48 28.4	.2165497
11	9 41 20.39	15 7 49.9	.3956496	22 17.2	126 51 33.1	1 48 39.2	.2167081
12	9 43 48.83	N. 14 55 37.6	0.3949863	22 15.7	127 18 20.9	N. 1 48 49.6	0.2168641
13	9 46 16.91	14 43 20.2	.3943106	22 14.2	127 45 7.5	1 48 59.7	.2170177
14	9 48 44.64	14 30 57.7	.3936225	22 12.7	128 11 53.0	1 49 9.3	.2171688
15	9 51 12.01	14 18 30.3	.3929219	22 11.2	128 38 37.5	1 49 18.6	.2173175
16	9 53 39.04	14 5 58.1	.3922087	22 9.7	129 5 20.8	1 49 27.4	.2174637
17	9 56 5.73	13 53 21.0	.3914827	22 8.2	129 32 3.1	1 49 35.9	.2176074
18	9 58 32.08	N. 13 40 39.3	0.3907438	22 6.7	129 58 44.3	N. 1 49 43.9	0.2177487
19	10 0 58.08	13 27 53.2	.3899921	22 5.2	130 25 24.5	1 49 51.6	.2178875
20	10 3 23.75	13 15 2.7	.3892272	22 3.7	130 52 3.7	1 49 58.8	.2180238
21	10 5 49.08	13 2 7.8	.3884492	22 2.2	131 18 41.9	1 50 5.7	.2181576
22	10 8 14.08	12 49 8.8	.3876580	22 0.6	131 45 19.1	1 50 12.1	.2182890
23	10 10 38.76	12 36 5.6	.3868536	21 59.1	132 11 55.3	1 50 18.1	.2184178
24	10 13 3.11	N. 12 22 58.5	0.3860357	21 57.5	132 38 30.6	N. 1 50 23.7	0.2185442
25	10 15 27.14	12 9 47.6	.3852045	21 56.0	133 5 5.0	1 50 28.9	.2186680
26	10 17 50.84	11 56 32.9	.3843599	21 54.4	133 31 38.5	1 50 33.8	.2187894
27	10 20 14.21	11 43 14.5	.3835018	21 52.9	133 58 11.1	1 50 38.2	.2189082
28	10 22 37.27	11 29 52.6	.3826301	21 51.3	134 24 42.8	1 50 42.3	.2190245
29	10 25 0.03	11 16 27.4	.3817449	21 49.8	134 51 13.7	1 50 45.9	.2191383
30	10 27 22.47	N. 11 2 58.9	0.3808462	21 48.2	135 17 43.8	N. 1 50 49.2	0.2192496
Oct. 1	10 29 44.61	10 49 27.0	.3799340	21 46.6	135 44 13.1	1 50 52.1	.2193583
2	10 32 6.44	10 35 52.0	.3790084	21 45.1	136 10 41.6	1 50 54.6	.2194645
3	10 34 27.98	10 22 14.2	.3780692	21 43.5	136 37 9.4	1 50 56.6	.2195682
4	10 36 49.23	N. 10 8 33.5	0.3771165	21 41.9	137 3 36.4	N. 1 50 58.3	0.2196694

MEAN TIME.

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	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Oct. 4	^{h m s} 10 36 49.23	^{° ' "} N. 10 8 33.5	0.3771165	^{h m} 21 41.9	^{° ' "} 137 3 36.4	^{° ' "} N. 1 50 58.3	0.2196694
5	10 39 10.19	9 54 49.9	0.3761502	21 40.3	137 30 2.6	1 50 59.5	0.2197680
6	10 41 30.88	9 41 3.6	0.3751704	21 38.7	137 56 28.2	1 51 0.4	0.2198641
7	10 43 51.29	9 27 14.6	0.3741770	21 37.1	138 22 53.1	1 51 0.9	0.2199576
8	10 46 11.44	9 13 23.2	0.3731697	21 35.5	138 49 17.3	1 51 0.9	0.2200486
9	10 48 31.32	8 59 29.2	0.3721486	21 33.9	139 15 40.8	1 51 0.6	0.2201371
10	10 50 50.95	N. 8 45 32.9	0.3711136	21 32.3	139 42 3.7	N. 1 50 59.9	0.2202230
11	10 53 10.35	8 31 34.4	0.3700644	21 30.6	140 8 26.0	1 50 58.9	0.2203064
12	10 55 29.49	8 17 33.7	0.3690011	21 29.0	140 34 47.7	1 50 57.4	0.2203872
13	10 57 48.39	8 3 30.9	0.3679234	21 27.4	141 1 8.8	1 50 55.6	0.2204654
14	11 0 7.05	7 49 26.1	0.3668313	21 25.8	141 27 29.4	1 50 53.3	0.2205411
15	11 2 25.49	7 35 19.4	0.3657246	21 24.1	141 53 49.4	1 50 50.7	0.2206142
16	11 4 43.71	N. 7 21 10.9	0.3646032	21 22.5	142 20 8.9	N. 1 50 47.7	0.2206848
17	11 7 1.70	7 7 0.7	0.3634671	21 20.9	142 46 27.9	1 50 44.2	0.2207528
18	11 9 19.47	6 52 48.9	0.3623160	21 19.2	143 12 46.4	1 50 40.4	0.2208182
19	11 11 37.02	6 38 35.6	0.3611499	21 17.6	143 39 4.4	1 50 36.2	0.2208811
20	11 13 54.36	6 24 21.0	0.3599687	21 15.9	144 5 22.0	1 50 31.6	0.2209413
21	11 16 11.48	6 10 5.0	0.3587724	21 14.2	144 31 39.1	1 50 26.6	0.2209991
22	11 18 28.39	N. 5 55 47.9	0.3575607	21 12.5	144 57 55.9	N. 1 50 21.3	0.2210542
23	11 20 45.10	5 41 29.7	0.3563336	21 10.9	145 24 12.2	1 50 15.6	0.2211068
24	11 23 1.60	5 27 10.6	0.3550912	21 9.2	145 50 28.2	1 50 9.5	0.2211568
25	11 25 17.90	5 12 50.6	0.3538333	21 7.6	146 16 43.8	1 50 3.0	0.2212042
26	11 27 34.00	4 58 29.8	0.3525598	21 5.9	146 42 59.1	1 49 56.1	0.2212490
27	11 29 49.90	4 44 8.4	0.3512707	21 4.2	147 9 14.0	1 49 48.8	0.2212913
28	11 32 5.61	N. 4 29 46.4	0.3499661	21 2.5	147 35 28.7	N. 1 49 41.2	0.2213310
29	11 34 21.13	4 15 23.9	0.3486460	21 0.8	148 1 43.1	1 49 33.1	0.2213681
30	11 36 36.46	4 1 1.1	0.3473104	20 59.2	148 27 57.2	1 49 24.7	0.2214026
31	11 38 51.61	3 46 38.1	0.3459592	20 57.5	148 54 11.1	1 49 15.9	0.2214345
Nov. 1	11 41 6.59	3 32 14.9	0.3445924	20 55.8	149 20 24.7	1 49 6.7	0.2214638
2	11 43 21.39	3 17 51.5	0.3432100	20 54.1	149 46 38.1	1 48 57.1	0.2214905
3	11 45 36.02	N. 3 3 28.2	0.3418121	20 52.4	150 12 51.4	N. 1 48 47.2	0.2215147
4	11 47 50.50	2 49 5.0	0.3403985	20 50.7	150 39 4.5	1 48 36.9	0.2215362
5	11 50 4.82	2 34 42.0	0.3389691	20 49.0	151 5 17.4	1 48 26.2	0.2215552
6	11 52 18.98	2 20 19.1	0.3375237	20 47.3	151 31 30.1	1 48 15.1	0.2215715
7	11 54 33.01	2 5 56.5	0.3360623	20 45.6	151 57 42.8	1 48 3.7	0.2215853
8	11 56 46.91	1 51 34.3	0.3345848	20 43.9	152 23 55.4	1 47 51.8	0.2215965
9	11 59 0.67	N. 1 37 12.6	0.3330910	20 42.1	152 50 7.9	N. 1 47 39.6	0.2216051
10	12 1 14.30	1 22 51.5	0.3315808	20 40.4	153 16 20.3	1 47 27.0	0.2216117
11	12 3 27.80	1 8 31.0	0.3300541	20 38.7	153 42 32.8	1 47 14.1	0.2216145
12	12 5 41.18	0 54 11.2	0.3285108	20 37.0	154 8 45.2	1 47 0.8	0.2216153
13	12 7 54.43	0 39 52.3	0.3269506	20 35.3	154 34 57.6	1 46 47.1	0.2216135
14	12 10 7.57	0 25 34.3	0.3253734	20 33.5	155 1 10.0	1 46 33.0	0.2216091
15	12 12 20.60	N. 0 11 17.3	0.3237791	20 31.8	155 27 22.4	N. 1 46 18.6	0.2216022
16	12 14 33.51	S. 0 2 58.7	0.3221677	20 30.1	155 53 34.9	1 46 3.8	0.2215926
17	12 16 46.30	0 17 13.4	0.3205390	20 28.3	156 19 47.5	1 45 48.6	0.2215805
18	12 18 58.98	0 31 26.8	0.3188928	20 26.6	156 46 0.1	1 45 33.1	0.2215657
19	12 21 11.55	S. 0 45 38.9	0.3172291	20 24.9	157 12 12.9	N. 1 45 17.2	0.2215484

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	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 19	h m s 12 21 11.55	S. 0 45 38.9	0.3172291	h m 20 24.9	157 12 12.9	N. 1 45 17.2	0.2215484
20	12 23 24.00	0 59 49.5	.3155478	20 23.2	157 38 25.8	1 45 0.9	.2215284
21	12 25 36.34	1 13 58.4	.3138489	20 21.4	158 4 38.9	1 44 44.2	.2215059
22	12 27 48.58	1 28 5.3	.3121322	20 19.7	158 30 52.1	1 44 27.2	.2214808
23	12 30 0.71	1 42 10.7	.3103974	20 17.9	158 57 5.5	1 44 9.8	.2214531
24	12 32 12.72	1 56 14.1	.3086447	20 16.2	159 23 19.1	1 43 52.0	.2214228
25	12 34 24.63	S. 2 10 15.4	0.3068742	20 14.5	159 49 32.9	N. 1 43 33.9	0.2213899
26	12 36 36.43	2 24 14.8	.3050859	20 12.7	160 15 47.0	1 43 15.4	.2213545
27	12 38 48.14	2 38 12.0	.3032798	20 11.0	160 42 1.3	1 42 56.6	.2213164
28	12 40 59.74	2 52 6.9	.3014559	20 9.2	161 8 15.9	1 42 37.4	.2212758
29	12 43 11.24	3 5 59.5	.2996140	20 7.5	161 34 30.8	1 42 17.8	.2212326
30	12 45 22.64	3 19 49.6	.2977541	20 5.7	162 0 46.0	1 41 57.9	.2211868
Dec. 1	12 47 33.94	S. 3 33 37.2	0.2958763	20 4.0	162 27 1.6	N. 1 41 37.6	0.2211384
2	12 49 45.15	3 47 22.3	.2939805	20 2.2	162 53 17.5	1 41 16.9	.2211075
3	12 51 56.28	4 1 4.7	.2920664	20 0.4	163 19 33.8	1 40 55.9	.2210739
4	12 54 7.33	4 14 44.5	.2901341	19 58.7	163 45 50.4	1 40 34.5	.2210378
5	12 56 18.29	4 28 21.5	.2881835	19 56.9	164 12 7.5	1 40 12.8	.2210019
6	12 58 29.18	4 41 55.6	.2862143	19 55.2	164 38 25.0	1 39 50.7	.2209579
7	13 0 40.00	S. 4 55 26.8	0.2842264	19 53.4	165 4 42.9	N. 1 39 28.3	0.2209140
8	13 2 50.74	5 8 55.0	.2822197	19 51.6	165 31 1.3	1 39 5.5	.2208766
9	13 5 1.41	5 22 20.1	.2801941	19 49.9	165 57 20.2	1 38 42.3	.2208377
10	13 7 12.00	5 35 42.1	.2781494	19 48.1	166 23 39.6	1 38 18.8	.2207971
11	13 9 22.52	5 49 0.9	.2760855	19 46.3	166 49 59.5	1 37 54.9	.2207549
12	13 11 32.96	6 2 16.3	.2740022	19 44.6	167 16 19.9	1 37 30.7	.2207114
13	13 13 43.33	S. 6 15 28.3	0.2718994	19 42.8	167 42 40.9	N. 1 37 6.1	0.2206672
14	13 15 53.63	6 28 36.8	.2697771	19 41.0	168 9 2.5	1 36 41.2	.2206225
15	13 18 3.85	6 41 41.7	.2676349	19 39.2	168 35 24.6	1 36 15.9	.2205771
16	13 20 13.98	6 54 43.0	.2654727	19 37.5	169 1 47.4	1 35 50.3	.2205311
17	13 22 24.04	7 7 40.6	.2632902	19 35.7	169 28 10.8	1 35 24.3	.2204848
18	13 24 34.01	7 20 34.3	.2610875	19 34.0	169 54 34.9	1 34 58.0	.2204384
19	13 26 43.90	S. 7 33 24.1	0.2588645	19 32.2	170 20 59.6	N. 1 34 31.3	0.2203921
20	13 28 53.70	7 46 9.9	.2566210	19 30.4	170 47 25.0	1 34 4.3	.2203458
21	13 31 3.40	7 58 51.7	.2543568	19 28.6	171 13 51.2	1 33 36.9	.2202995
22	13 33 13.01	8 11 29.2	.2520720	19 26.9	171 40 18.0	1 33 9.2	.2202532
23	13 35 22.52	8 24 2.4	.2497667	19 25.1	172 6 45.6	1 32 41.1	.2202069
24	13 37 31.91	8 36 31.3	.2474409	19 23.3	172 33 13.9	1 32 12.8	.2201606
25	13 39 41.20	S. 8 48 55.7	0.2450946	19 21.5	172 59 43.0	N. 1 31 44.1	0.2201143
26	13 41 50.37	9 1 15.6	.2427277	19 19.7	173 26 13.0	1 31 15.0	.2200680
27	13 43 59.43	9 13 30.9	.2403403	19 17.9	173 52 43.8	1 30 45.6	.2200217
28	13 46 8.38	9 25 41.5	.2379322	19 16.1	174 19 15.4	1 30 15.8	.2200000
29	13 48 17.20	9 37 47.4	.2355035	19 14.3	174 45 47.8	1 29 45.7	.2200000
30	13 50 25.90	9 49 48.4	.2330540	19 12.5	175 12 21.1	1 29 15.3	.2200000
31	13 52 34.48	S. 10 1 44.6	0.2305837	19 10.7	175 38 55.4	N. 1 28 44.5	0.2200000
32	13 54 42.94	S. 10 13 36.1	0.2280923	19 8.9	176 5 30.5	N. 1 28 13.4	0.2200000

MEAN TIME.

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	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Jan.	^{h m s} 1 17 28 4.29	^{° ' "} S.22 51 57.5	^{° ' "} 0.7934314	^{h m} 22 39.9	^{° ' "} 259 14 38.8	^{° ' "} N.0 26 58.9	^{° ' "} 0.7236915
	2 17 29 1.75	22 52 45.0	.7930395	22 37.0	259 19 27.6	0 26 52.7	.7236636
	3 17 29 59.08	22 53 31.0	.7926326	22 34.0	259 24 16.4	0 26 46.5	.7236358
	4 17 30 56.27	22 54 15.6	.7922108	22 31.0	259 29 5.3	0 26 40.3	.7236079
	5 17 31 53.32	22 54 58.8	.7917742	22 28.0	259 33 54.3	0 26 34.1	.7235800
	6 17 32 50.23	22 55 40.5	.7913227	22 25.0	259 38 43.2	0 26 27.9	.7235521
	7 17 33 46.97	S.22 56 20.8	0.7908565	22 22.0	259 43 32.2	N.0 26 21.7	0.7235242
	8 17 34 43.56	22 56 59.7	.7903755	22 19.0	259 48 21.2	0 26 15.5	.7234962
	9 17 35 39.98	22 57 37.1	.7898799	22 16.0	259 53 10.3	0 26 9.3	.7234683
	10 17 36 36.23	22 58 13.1	.7893696	22 13.0	259 57 59.4	0 26 3.0	.7234403
	11 17 37 32.29	22 58 47.7	.7888448	22 10.0	260 2 48.6	0 25 56.8	.7234123
	12 17 38 28.17	22 59 20.9	.7883055	22 7.0	260 7 37.7	0 25 50.6	.7233843
	13 17 39 23.86	S.22 59 52.8	0.7877516	22 4.0	260 12 26.9	N.0 25 44.3	0.7233563
	14 17 40 19.34	23 0 23.3	.7871833	22 1.0	260 17 16.2	0 25 38.1	.7233282
	15 17 41 14.62	23 0 52.5	.7866007	21 58.0	260 22 5.5	0 25 31.8	.7233002
	16 17 42 9.68	23 1 20.3	.7860037	21 55.0	260 26 54.8	0 25 25.6	.7232721
	17 17 43 4.52	23 1 46.9	.7853925	21 51.9	260 31 44.2	0 25 19.3	.7232440
	18 17 43 59.14	23 2 12.1	.7847670	21 48.9	260 36 33.6	0 25 13.1	.7232158
	19 17 44 53.52	S.23 2 36.0	0.7841272	21 45.9	260 41 23.1	N.0 25 6.8	0.7231877
	20 17 45 47.66	23 2 58.6	.7834733	21 42.8	260 46 12.5	0 25 0.5	.7231595
	21 17 46 41.56	23 3 19.9	.7828053	21 39.8	260 51 2.0	0 24 54.2	.7231313
	22 17 47 35.21	23 3 40.0	.7821232	21 36.7	260 55 51.5	0 24 47.9	.7231031
	23 17 48 28.60	23 3 58.8	.7814269	21 33.7	261 0 41.0	0 24 41.6	.7230749
	24 17 49 21.73	23 4 16.4	.7807166	21 30.6	261 5 30.6	0 24 35.3	.7230467
	25 17 50 14.58	S.23 4 32.8	0.7799922	21 27.6	261 10 20.2	N.0 24 29.0	0.7230184
	26 17 51 7.16	23 4 48.0	.7792537	21 24.5	261 15 9.9	0 24 22.7	.7229902
	27 17 51 59.45	23 5 2.0	.7785012	21 21.4	261 19 59.6	0 24 16.4	.7229619
	28 17 52 51.45	23 5 14.9	.7777348	21 18.4	261 24 49.4	0 24 10.1	.7229336
	29 17 53 43.14	23 5 26.6	.7769545	21 15.3	261 29 39.2	0 24 3.8	.7229053
	30 17 54 34.53	23 5 37.2	.7761605	21 12.2	261 34 29.1	0 23 57.5	.7228769
	31 17 55 25.59	S.23 5 46.7	0.7753527	21 9.1	261 39 18.9	N.0 23 51.2	0.7228486
Feb.	1 17 56 16.33	23 5 55.1	.7745314	21 6.0	261 44 8.8	0 23 44.9	.7228202
	2 17 57 6.73	23 6 2.4	.7736966	21 2.9	261 48 58.7	0 23 38.6	.7227918
	3 17 57 56.79	23 6 8.7	.7728484	20 59.8	261 53 48.7	0 23 32.3	.7227634
	4 17 58 46.50	23 6 13.9	.7719870	20 56.7	261 58 38.7	0 23 25.9	.7227349
	5 17 59 35.86	23 6 18.2	.7711123	20 53.6	262 3 28.8	0 23 19.6	.7227065
	6 18 0 24.85	S.23 6 21.4	0.7702245	20 50.5	262 8 18.9	N.0 23 13.3	0.7226780
	7 18 1 13.48	23 6 23.6	.7693238	20 47.3	262 13 9.1	0 23 6.9	.7226496
	8 18 2 1.73	23 6 24.9	.7684102	20 44.2	262 17 59.2	0 23 0.6	.7226211
	9 18 2 49.59	23 6 25.3	.7674838	20 41.0	262 22 49.4	0 22 54.3	.7225926
	10 18 3 37.06	23 6 24.7	.7665448	20 37.9	262 27 39.6	0 22 47.9	.7225641
	11 18 4 24.14	23 6 23.3	.7655932	20 34.7	262 32 29.8	0 22 41.6	.7225356
	12 18 5 10.81	S.23 6 21.0	0.7646291	20 31.6	262 37 20.1	N.0 22 35.2	0.7225070
	13 18 5 57.07	23 6 17.9	.7636527	20 28.4	262 42 10.5	0 22 28.9	.7224784
	14 18 6 42.91	23 6 14.1	.7626642	20 25.2	262 47 0.9	0 22 22.5	.7224498
	15 18 7 28.33	23 6 9.5	.7616635	20 22.0	262 51 51.3	0 22 16.2	.7224212
	16 18 8 13.32	S.23 6 4.1	0.7606507	20 18.8	262 56 41.8	N.0 22 9.8	0.7223926

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Feb. 16	^{h m s} 18 8 13.32	^{° ' "} S. 23 6 4.1	0.7606507	^{h m} 20 18.8	^{° ' "} 262 56 41.8	^{° ' "} V. 0 22 9.8	0.7223926
17	18 8 57.87	23 5 58.0	.7596260	20 15.6	263 1 32.2	0 22 3.4	.7223640
18	18 9 41.99	23 5 51.3	.7585895	20 12.4	263 6 22.7	0 21 57.0	.7223353
19	18 10 25.65	23 5 43.8	.7575412	20 9.2	263 11 13.3	0 21 50.6	.7223067
20	18 11 8.86	23 5 35.6	.7564813	20 6.0	263 16 3.9	0 21 44.2	.7222780
21	18 11 51.61	23 5 26.9	.7554098	20 2.8	263 20 54.5	0 21 37.8	.7222493
22	18 12 33.89	S. 23 5 17.5	0.7543268	19 59.5	263 25 45.1	N. 0 21 31.4	0.7222206
23	18 13 15.68	23 5 7.6	.7532326	19 56.3	263 30 35.8	0 21 25.0	.7221919
24	18 13 56.98	23 4 57.2	.7521272	19 53.0	263 35 26.6	0 21 18.6	.7221631
25	18 14 37.79	23 4 46.2	.7510107	19 49.8	263 40 17.4	0 21 12.2	.7221344
26	18 15 18.09	23 4 34.8	.7498832	19 46.5	263 45 8.2	0 21 5.8	.7221056
27	18 15 57.88	23 4 23.0	.7487749	19 43.2	263 49 59.1	0 20 59.4	.7220768
28	18 16 37.14	S. 23 4 10.8	0.7475960	19 39.9	263 54 49.9	N. 0 20 53.0	0.7220480
Mar. 1	18 17 15.87	23 3 58.1	.7464368	19 36.6	263 59 40.8	0 20 46.6	.7220192
2	18 17 54.07	23 3 45.1	.7452674	19 33.3	264 4 31.8	0 20 40.1	.7219903
3	18 18 31.72	23 3 31.7	.7440879	19 30.0	264 9 22.8	0 20 33.7	.7219615
4	18 19 8.82	23 3 18.0	.7428987	19 26.7	264 14 13.8	0 20 27.3	.7219326
5	18 19 45.36	23 3 3.9	.7416998	19 23.4	264 19 4.9	0 20 20.8	.7219037
6	18 20 21.33	S. 23 2 49.6	0.7404914	19 20.0	264 23 56.0	N. 0 20 14.4	0.7218748
7	18 20 56.73	23 2 35.1	.7392739	19 16.7	264 28 47.2	0 20 8.0	.7218458
8	18 21 31.55	23 2 20.3	.7380474	19 13.3	264 33 38.4	0 20 1.5	.7218169
9	18 22 5.78	23 2 5.4	.7368120	19 9.9	264 38 29.7	0 19 55.1	.7217879
10	18 22 39.41	23 1 50.4	.7355681	19 6.6	264 43 20.9	0 19 48.7	.7217589
11	18 23 12.45	23 1 35.3	.7343158	19 3.2	264 48 12.2	0 19 42.2	.7217299
12	18 23 44.87	S. 23 1 20.1	0.7330553	18 59.8	264 53 3.5	N. 0 19 35.8	0.7217009
13	18 24 16.69	23 1 4.8	.7317869	18 56.3	264 57 54.8	0 19 29.4	.7216719
14	18 24 47.89	23 0 49.5	.7305108	18 52.9	265 2 46.2	0 19 22.9	.7216429
15	18 25 18.46	23 0 34.2	.7292271	18 49.5	265 7 37.7	0 19 16.5	.7216138
16	18 25 48.40	23 0 18.9	.7279362	18 46.1	265 12 29.2	0 19 10.0	.7215848
17	18 26 17.71	23 0 3.7	.7266383	18 42.6	265 17 20.7	0 19 3.6	.7215557
18	18 26 46.38	S. 22 59 48.6	0.7253334	18 39.1	265 22 12.3	N. 0 18 57.1	0.7215266
19	18 27 14.39	22 59 33.6	.7240219	18 35.7	265 27 4.0	0 18 50.7	.7214975
20	18 27 41.75	22 59 18.7	.7227039	18 32.2	265 31 55.6	0 18 44.2	.7214684
21	18 28 8.44	22 59 4.0	.7213797	18 28.7	265 36 47.3	0 18 37.7	.7214392
22	18 28 34.46	22 58 49.5	.7200494	18 25.2	265 41 39.0	0 18 31.2	.7214101
23	18 28 59.80	22 58 35.2	.7187135	18 21.6	265 46 30.7	0 18 24.7	.7213809
24	18 29 24.46	S. 22 58 21.2	0.7173721	18 18.1	265 51 22.5	N. 0 18 18.2	0.7213518
25	18 29 48.42	22 58 7.4	.7160255	18 14.6	265 56 14.4	0 18 11.7	.7213226
26	18 30 11.67	22 57 53.9	.7146740	18 11.0	266 1 6.3	0 18 5.2	.7212934
27	18 30 34.22	22 57 40.8	.7133180	18 7.4	266 5 58.3	0 17 58.7	.7212642
28	18 30 56.05	22 57 28.0	.7119577	18 3.9	266 10 50.2	0 17 52.2	.7212349
29	18 31 17.16	22 57 15.6	.7105934	18 0.3	266 15 42.2	0 17 45.7	.7212057
30	18 31 37.54	S. 22 57 3.6	0.7092254	17 56.6	266 20 34.3	N. 0 17 39.2	0.7211764
31	18 31 57.19	22 56 52.0	.7078542	17 53.0	266 25 26.4	0 17 32.7	.7211472
Apr. 1	18 32 16.09	22 56 40.8	.7064801	17 49.4	266 30 18.5	0 17 26.2	.7211179
2	18 32 34.25	22 56 30.1	.7051034	17 45.8	266 35 10.6	0 17 19.7	.7210886
3	18 32 51.66	S. 22 56 19.9	0.7037245	17 42.1	266 40 2.8	N. 0 17 13.2	0.7210593

JUPITER, 1889.

MEAN TIME.

Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
h m s	° ' "		h m	° ' "	° ' "	
18 32 51.66	S. 22 56 19.9	0.7037245	17 42.1	266 40 2.8	N. 0 17 13.2	0.7210593
18 33 8.31	22 56 10.3	.7023438	17 38.5	266 44 55.1	0 17 6.7	.7210399
18 33 24.19	22 56 1.1	.7009616	17 34.8	266 49 47.4	0 17 0.1	.7210006
18 33 39.31	22 55 52.5	.6995784	17 31.1	266 54 39.8	0 16 53.6	.7209712
18 33 53.66	22 55 44.5	.6981944	17 27.4	266 59 32.1	0 16 47.1	.7209418
18 34 7.25	22 55 37.0	.6968101	17 23.7	267 4 24.5	0 16 40.5	.7209124
18 34 20.06	S. 22 55 30.1	0.6954259	17 20.0	267 9 16.9	N. 0 16 34.0	0.7208830
18 34 32.08	22 55 23.9	.6940421	17 16.2	267 14 9.4	0 16 27.5	.7208536
18 34 43.32	22 55 18.2	.6926592	17 12.4	267 19 1.9	0 16 20.9	.7208242
18 34 53.78	22 55 13.2	.6912773	17 8.7	267 23 54.4	0 16 14.4	.7207947
18 35 3.45	22 55 8.9	.6898970	17 4.9	267 28 47.0	0 16 7.8	.7207653
18 35 12.32	22 55 5.2	.6885187	17 1.1	267 33 39.7	0 16 1.3	.7207358
18 35 20.41	S. 22 55 2.2	0.6871427	16 57.3	267 38 32.4	N. 0 15 54.7	0.7207063
18 35 27.70	22 55 0.0	.6857694	16 53.5	267 43 25.2	0 15 48.2	.7206768
18 35 34.19	22 54 58.4	.6843992	16 49.6	267 48 17.9	0 15 41.6	.7206473
18 35 39.87	22 54 57.5	.6830325	16 45.8	267 53 10.7	0 15 35.0	.7206178
18 35 44.75	22 54 57.4	.6816697	16 41.9	267 58 3.6	0 15 28.5	.7205882
18 35 48.81	22 54 58.0	.6803112	16 38.1	268 2 56.5	0 15 21.9	.7205587
18 35 52.06	S. 22 54 59.3	0.6789574	16 34.2	268 7 49.4	N. 0 15 15.3	0.7205291
18 35 54.50	22 55 1.4	.6776089	16 30.3	268 12 42.3	0 15 8.7	.7204996
18 35 56.11	22 55 4.3	.6762661	16 26.3	268 17 35.3	0 15 2.1	.7204700
18 35 56.91	22 55 7.9	.6749295	16 22.4	268 22 28.4	0 14 55.6	.7204404
18 35 56.88	22 55 12.3	.6735995	16 18.5	268 27 21.5	0 14 49.0	.7204108
18 35 56.03	22 55 17.5	.6722767	16 14.5	268 32 14.7	0 14 42.4	.7203811
18 35 54.36	S. 22 55 23.4	0.6709616	16 10.6	268 37 7.8	N. 0 14 35.8	0.7203515
18 35 51.87	22 55 30.1	.6696548	16 6.6	268 42 1.0	0 14 29.2	.7203218
18 35 48.56	22 55 37.5	.6683567	16 2.6	268 46 54.3	0 14 22.6	.7202922
18 35 44.43	22 55 45.7	.6670678	15 58.6	268 51 47.7	0 14 16.0	.7202625
18 35 39.49	22 55 54.6	.6657888	15 54.6	268 56 41.0	0 14 9.4	.7202328
18 35 33.73	22 56 4.3	.6645200	15 50.5	269 1 34.4	0 14 2.8	.7202031
18 35 27.16	S. 22 56 14.7	0.6632621	15 46.5	269 6 27.8	N. 0 13 56.2	0.7201734
18 35 19.77	22 56 25.8	.6620156	15 42.4	269 11 21.3	0 13 49.6	.7201437
18 35 11.59	22 56 37.6	.6607810	15 38.3	269 16 14.9	0 13 43.0	.7201139
18 35 2.61	22 56 50.1	.6595588	15 34.2	269 21 8.4	0 13 36.4	.7200842
18 34 52.84	22 57 3.4	.6583495	15 30.1	269 26 2.0	0 13 29.8	.7200544
18 34 42.28	22 57 17.3	.6571536	15 26.0	269 30 55.6	0 13 23.2	.7200246
18 34 30.94	S. 22 57 31.9	0.6559718	15 21.9	269 35 49.3	N. 0 13 16.5	0.7199948
18 34 18.83	22 57 47.2	.6548044	15 17.8	269 40 43.0	0 13 9.9	.7199650
18 34 5.95	22 58 3.1	.6536519	15 13.6	269 45 36.8	0 13 3.3	.7199352
18 33 52.31	22 58 19.6	.6525148	15 9.4	269 50 30.5	0 12 56.7	.7199054
18 33 37.91	22 58 36.7	.6513936	15 5.3	269 55 24.3	0 12 50.1	.7198756
18 33 22.77	22 58 54.4	.6502887	15 1.1	270 0 18.2	0 12 43.4	.7198457
18 33 6.89	S. 22 59 12.6	0.6492006	14 56.9	270 5 12.1	N. 0 12 36.8	0.7198159
18 32 50.28	22 59 31.4	.6481297	14 52.7	270 10 6.1	0 12 30.2	.7197860
18 32 32.95	22 59 50.7	.6470768	14 48.4	270 15 0.1	0 12 23.6	.7197561
18 32 14.90	23 0 10.4	.6460422	14 44.2	270 19 54.1	0 12 16.9	.7197262
18 31 56.14	S. 23 0 30.7	0.6450264	14 40.0	270 24 48.2	N. 0 12 10.3	0.7196963

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May 19	h m s	° ' "	°	h m	° ' "	° ' "	°
	18 31 56.14	S. 23 0 30.7	0.6450264	14 40.0	270 24 48.2	N. 0 12 10.3	0.7196963
20	18 31 36.68	23 0 51.4	0.6440300	14 35.7	270 29 42.4	0 12 3.7	0.7196664
21	18 31 16.54	23 1 12.6	0.6430534	14 31.4	270 34 36.6	0 11 57.0	0.7196365
22	18 30 55.72	23 1 34.2	0.6420973	14 27.1	270 39 30.8	0 11 50.4	0.7196065
23	18 30 34.23	23 1 56.2	0.6411621	14 22.8	270 44 25.0	0 11 43.7	0.7195766
24	18 30 12.09	23 2 18.6	0.6402483	14 18.5	270 49 19.3	0 11 37.1	0.7195466
25	18 29 49.32	S. 23 2 41.4	0.6393564	14 14.2	270 54 13.6	N. 0 11 30.4	0.7195167
26	18 29 25.91	23 3 4.4	0.6384870	14 9.9	270 59 8.0	0 11 23.8	0.7194867
27	18 29 1.89	23 3 27.7	0.6376405	14 5.6	271 4 2.5	0 11 17.1	0.7194567
28	18 28 37.28	23 3 51.3	0.6368174	14 1.2	271 8 56.9	0 11 10.5	0.7194267
29	18 28 12.08	23 4 15.0	0.6360183	13 56.9	271 13 51.4	0 11 3.8	0.7193967
30	18 27 46.32	23 4 39.0	0.6352434	13 52.5	271 18 46.0	0 10 57.1	0.7193666
31	18 27 20.02	S. 23 5 3.2	0.6344933	13 48.1	271 23 40.6	N. 0 10 50.5	0.7193366
June 1	18 26 53.18	23 5 27.5	0.6337885	13 43.8	271 28 35.2	0 10 43.8	0.7193065
2	18 26 25.83	23 5 51.9	0.6330693	13 39.4	271 33 29.9	0 10 37.1	0.7192765
3	18 25 58.00	23 6 16.3	0.6323962	13 35.0	271 38 24.6	0 10 30.5	0.7192464
4	18 25 29.69	23 6 40.8	0.6317494	13 30.5	271 43 19.4	0 10 23.8	0.7192164
5	18 25 0.93	23 7 5.3	0.6311293	13 26.1	271 48 14.2	0 10 17.1	0.7191863
6	18 24 31.73	S. 23 7 29.8	0.6305362	13 21.7	271 53 9.0	N. 0 10 10.4	0.7191562
7	18 24 2.12	23 7 54.3	0.6299705	13 17.3	271 58 3.9	0 10 3.7	0.7191261
8	18 23 32.12	23 8 18.7	0.6294325	13 12.9	272 2 58.9	0 9 57.0	0.7190959
9	18 23 1.75	23 8 43.0	0.6289224	13 8.4	272 7 53.8	0 9 50.3	0.7190658
10	18 22 31.03	23 9 7.3	0.6284405	13 4.0	272 12 48.8	0 9 43.6	0.7190356
11	18 21 59.97	23 9 31.4	0.6279870	12 59.5	272 17 43.9	0 9 36.9	0.7190055
12	18 21 28.60	S. 23 9 55.4	0.6275622	12 55.1	272 22 39.0	N. 0 9 30.2	0.7189753
13	18 20 56.94	23 10 19.2	0.6271662	12 50.6	272 27 34.1	0 9 23.5	0.7189452
14	18 20 25.01	23 10 42.8	0.6267992	12 46.1	272 32 29.3	0 9 16.8	0.7189150
15	18 19 52.84	23 11 6.1	0.6264614	12 41.7	272 37 24.5	0 9 10.1	0.7188848
16	18 19 20.43	23 11 29.2	0.6261532	12 37.2	272 42 19.7	0 9 3.4	0.7188546
17	18 18 47.82	23 11 52.0	0.6258746	12 32.7	272 47 15.0	0 8 56.7	0.7188244
18	18 18 15.02	S. 23 12 14.6	0.6256259	12 28.3	272 52 10.4	N. 0 8 50.0	0.7187941
19	18 17 42.06	23 12 36.8	0.6254073	12 23.8	272 57 5.8	0 8 43.2	0.7187639
20	18 17 8.95	23 12 58.7	0.6252189	12 19.3	273 1 1.2	0 8 36.5	0.7187336
21	18 16 35.73	23 13 20.3	0.6250608	12 14.8	273 6 56.6	0 8 29.8	0.7187034
22	18 16 2.41	23 13 41.5	0.6249331	12 10.3	273 11 52.1	0 8 23.1	0.7186731
23	18 15 29.03	23 14 2.3	0.6248360	12 5.8	273 16 47.6	0 8 16.3	0.7186429
24	18 14 55.59	S. 23 14 22.8	0.6247694	12 1.3	273 21 43.2	N. 0 8 9.6	0.7186126
25	18 14 22.14	23 14 42.8	0.6247335	11 56.9	273 26 38.8	0 8 2.9	0.7185823
26	18 13 48.69	23 15 2.4	0.6247284	11 52.4	273 31 34.5	0 7 56.2	0.7185520
27	18 13 15.28	23 15 21.6	0.6247538	11 47.9	273 36 30.2	0 7 49.5	0.7185217
28	18 12 41.92	23 15 40.4	0.6248100	11 43.4	273 41 26.0	0 7 42.8	0.7184914
29	18 12 8.63	23 15 58.8	0.6248968	11 38.9	273 46 21.8	0 7 36.0	0.7184611
30	18 11 35.45	S. 23 16 16.8	0.6250141	11 34.5	273 51 17.7	N. 0 7 29.3	0.7184307
July 1	18 11 2.40	23 16 34.3	0.6251618	11 30.0	273 56 13.5	0 7 22.6	0.7184004
2	18 10 29.50	23 16 51.4	0.6253399	11 25.5	274 1 9.4	0 7 15.8	0.7183700
3	18 9 56.78	23 17 8.0	0.6255481	11 21.0	274 6 5.4	0 7 9.1	0.7183397
4	18 9 24.26	S. 23 17 24.2	0.6257863	11 16.6	274 11 1.4	N. 0 7 2.4	0.7183093

MEAN TIME.

Month and Day.	Apparent Right Ascension.			Apparent Declination.			Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.
	Noon.			Noon.			Noon.				Noon.			Noon.			
July	h	m	s	°	'	"	°	'	"	h	m	°	'	"	°	'	"
4	18	9	24.26	S. 23	17	24.2	0.6257863	11	16.6	274	11	1.4	N. 0	7	2.4	0.7183093	
5	18	8	51.96	23	17	40.0	.6260542	11	12.1	274	15	57.5	0	6	55.6	.7182789	
6	18	8	19.91	23	17	55.4	.6263515	11	7.6	274	20	53.5	0	6	48.9	.7182488	
7	18	7	48.12	23	18	10.3	.6266782	11	3.2	274	25	49.6	0	6	42.2	.7182181	
8	18	7	16.63	23	18	24.8	.6270338	10	58.7	274	30	45.8	0	6	35.4	.7181877	
9	18	6	45.45	23	18	38.8	.6274181	10	54.3	274	35	42.0	0	6	28.7	.7181573	
10	18	6	14.60	S. 23	18	52.4	0.6278308	10	49.8	274	40	38.3	N. 0	6	21.9	0.7181269	
11	18	5	44.10	23	19	5.6	.6282717	10	45.4	274	45	34.5	0	6	15.2	.7180965	
12	18	5	13.98	23	19	18.4	.6287405	10	41.0	274	50	30.8	0	6	8.4	.7180661	
13	18	4	44.24	23	19	30.8	.6292369	10	36.6	274	55	27.2	0	6	1.7	.7180356	
14	18	4	14.91	23	19	42.8	.6297604	10	32.2	275	0	23.6	0	5	54.9	.7180052	
15	18	3	46.01	23	19	54.4	.6303109	10	27.7	275	5	20.1	0	5	48.2	.7179747	
16	18	3	17.55	S. 23	20	5.7	0.6308881	10	23.3	275	10	16.5	N. 0	5	41.4	0.7179443	
17	18	2	49.56	23	20	16.6	.6314915	10	18.9	275	15	13.0	0	5	34.7	.7179138	
18	18	2	22.05	23	20	27.2	.6321209	10	14.6	275	20	9.6	0	5	27.9	.7178833	
19	18	1	55.04	23	20	37.5	.6327760	10	10.2	275	25	6.2	0	5	21.1	.7178528	
20	18	1	28.55	23	20	47.5	.6334564	10	5.8	275	30	2.9	0	5	14.4	.7178223	
21	18	1	2.60	23	20	57.1	.6341617	10	1.5	275	34	59.6	0	5	7.6	.7177918	
22	18	0	37.20	S. 23	21	6.5	0.6348914	9	57.1	275	39	56.3	N. 0	5	0.8	0.7177613	
23	18	0	12.37	23	21	15.6	.6356452	9	52.8	275	44	53.1	0	4	54.1	.7177308	
24	17	59	48.12	23	21	24.5	.6364227	9	48.4	275	49	49.9	0	4	47.3	.7177002	
25	17	59	24.48	23	21	33.1	.6372233	9	44.1	275	54	46.8	0	4	40.5	.7176697	
26	17	59	1.46	23	21	41.5	.6380467	9	39.8	275	59	43.6	0	4	33.7	.7176392	
27	17	58	39.08	23	21	49.7	.6388924	9	35.5	276	4	40.5	0	4	27.0	.7176086	
28	17	58	17.34	S. 23	21	57.7	0.6397599	9	31.2	276	9	37.5	N. 0	4	20.2	0.7175781	
29	17	57	56.26	23	22	5.5	.6406487	9	26.9	276	14	34.6	0	4	13.4	.7175475	
30	17	57	35.86	23	22	13.2	.6415582	9	22.7	276	19	31.6	0	4	6.6	.7175170	
31	17	57	16.15	23	22	20.7	.6424880	9	18.4	276	24	28.7	0	3	59.8	.7174864	
Aug. 1	17	56	57.14	23	22	28.1	.6434375	9	14.2	276	29	25.8	0	3	53.0	.7174558	
2	17	56	38.85	23	22	35.4	.6444061	9	10.0	276	34	23.0	0	3	46.3	.7174252	
3	17	56	21.28	S. 23	22	42.6	0.6453935	9	5.7	276	39	20.2	N. 0	3	39.5	0.7173946	
4	17	56	4.44	23	22	49.7	.6463989	9	1.5	276	44	17.5	0	3	32.7	.7173640	
5	17	55	48.34	23	22	56.7	.6474219	8	57.3	276	49	14.8	0	3	25.9	.7173333	
6	17	55	32.98	23	23	3.7	.6484620	8	53.2	276	54	12.2	0	3	19.1	.7173027	
7	17	55	18.39	23	23	10.7	.6495185	8	49.0	276	59	9.5	0	3	12.3	.7172721	
8	17	55	4.55	23	23	17.6	.6505910	8	44.8	277	4	6.9	0	3	5.5	.7172415	
9	17	54	51.48	S. 23	23	24.5	0.6516789	8	40.7	277	9	4.4	N. 0	2	58.7	0.7172108	
10	17	54	39.19	23	23	31.5	.6527818	8	36.5	277	14	1.9	0	2	51.9	.7171802	
11	17	54	27.67	23	23	38.4	.6538992	8	32.4	277	18	59.5	0	2	45.1	.7171496	
12	17	54	16.94	23	23	45.3	.6550306	8	28.3	277	23	57.1	0	2	38.3	.7171189	
13	17	54	7.00	23	23	52.3	.6561754	8	24.2	277	28	54.8	0	2	31.5	.7170883	
14	17	53	57.85	23	23	59.3	.6573332	8	20.2	277	33	52.5	0	2	24.7	.7170576	
15	17	53	49.49	S. 23	24	6.3	0.6585035	8	16.1	277	38	50.2	N. 0	2	17.9	0.7170270	
16	17	53	41.94	23	24	13.4	.6596858	8	12.0	277	43	48.0	0	2	11.1	.7169963	
17	17	53	35.20	23	24	20.6	.6608797	8	8.0	277	48	45.7	0	2	4.3	.7169656	
18	17	53	29.27	23	24	27.8	.6620846	8	4.0	277	53	43.5	0	1	57.5	.7169349	
19	17	53	24.15	S. 23	24	35.1	0.6633003	8	0.0	277	58	41.4	N. 0	1	50.7	0.7169042	

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Aug. 19	h m s 17 53 24.15	S. 23 24 35.1	0.6633003	h m 8 0.0	0 150.7	0.7169042	
20	17 53 19.85	23 24 42.5	.6645262	7 56.0	0 143.9	.7168735	
21	17 53 16.37	23 24 49.9	.6657616	7 52.0	0 137.1	.7168428	
22	17 53 13.70	23 24 57.5	.6670061	7 48.0	0 130.3	.7168120	
23	17 53 11.87	23 25 5.1	.6682592	7 44.1	0 123.5	.7167813	
24	17 53 10.86	23 25 12.9	.6695205	7 40.1	0 116.6	.7167506	
25	17 53 10.68	S. 23 25 20.7	0.6707894	7 36.2	N.0 1 9.8	0.7167199	
26	17 53 11.33	23 25 28.7	.6720655	7 32.3	0 1 3.0	.7166891	
27	17 53 12.81	23 25 36.7	.6733482	7 28.4	0 056.2	.7166584	
28	17 53 15.12	23 25 44.8	.6746370	7 24.5	0 049.4	.7166277	
29	17 53 18.26	23 25 53.0	.6759316	7 20.6	0 042.6	.7165969	
30	17 53 22.22	23 26 1.2	.6772313	7 16.7	0 035.7	.7165662	
31	17 53 27.01	S. 23 26 9.5	0.6785357	7 12.9	N.0 0 28.9	0.7165354	
Sept. 1	17 53 32.62	23 26 17.9	.6798442	7 9.1	0 022.1	.7165046	
2	17 53 39.06	23 26 26.4	.6811566	7 5.2	0 015.3	.7164739	
3	17 53 46.31	23 26 34.9	.6824723	7 1.4	0 0 8.4	.7164431	
4	17 53 54.37	23 26 43.5	.6837909	6 57.6	N.0 0 1.6	.7164123	
5	17 54 3.25	23 26 52.1	.6851119	6 53.9	0 0 5.2	.7163815	
6	17 54 12.93	S. 23 27 0.8	0.6864348	6 50.1	S.0 0 12.0	0.7163507	
7	17 54 23.40	23 27 9.5	.6877594	6 46.3	0 0 18.9	.7163199	
8	17 54 34.68	23 27 18.3	.6890853	6 42.6	0 0 25.7	.7162891	
9	17 54 46.74	23 27 27.0	.6904121	6 38.8	0 0 32.5	.7162583	
10	17 54 59.59	23 27 35.7	.6917395	6 35.1	0 0 39.4	.7162275	
11	17 55 13.23	23 27 44.4	.6930671	6 31.4	0 0 46.2	.7161966	
12	17 55 27.64	S. 23 27 53.0	0.6943946	6 27.7	S.0 0 53.0	0.7161658	
13	17 55 42.83	23 28 1.6	.6957217	6 24.1	0 0 59.9	.7161350	
14	17 55 58.79	23 28 10.2	.6970480	6 20.4	0 1 6.7	.7161041	
15	17 56 15.51	23 28 18.6	.6983731	6 16.8	0 1 13.5	.7160733	
16	17 56 33.00	23 28 27.0	.6996968	6 13.1	0 1 20.4	.7160425	
17	17 56 51.24	23 28 35.2	.7010186	6 9.5	0 1 27.2	.7160116	
18	17 57 10.24	S. 23 28 43.3	0.7023383	6 5.9	S.0 1 34.1	0.7159808	
19	17 57 29.98	23 28 51.4	.7036555	6 2.3	0 1 40.9	.7159499	
20	17 57 50.47	23 28 59.2	.7049699	5 58.7	0 1 47.8	.7159191	
21	17 58 11.70	23 29 6.9	.7062811	5 55.1	0 1 54.6	.7158882	
22	17 58 33.67	23 29 14.4	.7075889	5 51.6	0 2 1.4	.7158574	
23	17 58 56.36	23 29 21.7	.7088929	5 48.0	0 2 8.3	.7158265	
24	17 59 19.78	S. 23 29 28.7	0.7101927	5 44.5	S.0 2 15.1	0.7157957	
25	17 59 43.91	23 29 35.5	.7114882	5 40.9	0 2 22.0	.7157648	
26	18 0 8.75	23 29 42.0	.7127789	5 37.4	0 2 28.8	.7157340	
27	18 0 34.30	23 29 48.2	.7140645	5 33.9	0 2 35.6	.7157031	
28	18 1 0.54	23 29 54.1	.7153446	5 30.4	0 2 42.5	.7156722	
29	18 1 27.48	23 29 59.6	.7166192	5 26.9	0 2 49.3	.7156413	
30	18 1 55.10	S. 23 30 4.8	0.7178877	5 23.5	S.0 2 56.2	0.7156104	
Oct. 1	18 2 23.39	23 30 9.6	.7191500	5 20.0	0 3 3.0	.7155795	
2	18 2 52.34	23 30 14.0	.7204058	5 16.5	0 3 9.8	.7155486	
3	18 3 21.96	23 30 18.0	.7216549	5 13.1	0 3 16.7	.7155177	
4	18 3 52.23	S. 23 30 21.5	0.7228970	5 9.7	S.0 3 23.5	0.7154868	

MEAN TIME.

Month and Day.	Apparent Right Ascension.			Apparent Declination.			Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.									
	Noon.			Noon.			Noon.				Noon.			Noon.												
Oct.	4	h	m	s	S.	°	'	"	0°	7228970	5	9	7	281	47	48	0	3	23	5	0°	7154868				
	5	18	4	23	14		23	30	24	6		5	6	3	281	52	47	8	0	3	30	4	°	7154539		
	6	18	4	54	68		23	30	27	2		5	2	8	281	57	47	7	0	3	37	2	°	7154450		
	7	18	5	26	86		23	30	29	3		4	59	4	282	2	47	6	0	3	44	1	°	7153941		
	8	18	5	59	66		23	30	30	9		4	56	1	282	7	47	6	0	3	50	9	°	7153631		
	9	18	6	33	07		23	30	31	9		4	52	7	282	12	47	6	0	3	57	8	°	7153322		
	10	18	7	7	09	S.	23	30	32	3	0°	7301918	4	49	3	282	17	47	7	S.	0	4	4	7	°	7153013
	11	18	7	41	71		23	30	32	1		°	7313795	4	46	0	282	22	47	8	0	4	11	5	°	7152704
	12	18	8	16	92		23	30	31	3		°	7325588	4	42	6	282	27	47	9	0	4	18	4	°	7152394
	13	18	8	52	72		23	30	29	8		°	7337294	4	39	3	282	32	48	1	0	4	25	2	°	7152085
	14	18	9	29	10		23	30	27	7		°	7348912	4	36	0	282	37	48	3	0	4	32	1	°	7151776
	15	18	10	6	06		23	30	24	9		°	7360439	4	32	6	282	42	48	6	0	4	38	9	°	7151467
	16	18	10	43	58	S.	23	30	21	3	0°	7371875	4	29	3	282	47	48	9	S.	0	4	45	8	°	7151157
	17	18	11	21	67		23	30	17	0		°	7383216	4	26	0	282	52	49	3	0	4	52	6	°	7150848
	18	18	12	0	31		23	30	12	0		°	7394462	4	22	8	282	57	49	7	0	4	59	5	°	7150539
	19	18	12	39	50		23	30	6	1		°	7405611	4	19	5	283	2	50	1	0	5	6	3	°	7150229
	20	18	13	19	24		23	29	59	5		°	7416660	4	16	2	283	7	50	6	0	5	13	2	°	7149920
	21	18	13	59	51		23	29	52	0		°	7427607	4	12	9	283	12	51	1	0	5	20	0	°	7149611
	22	18	14	40	31	S.	23	29	43	6	0°	7438450	4	9	7	283	17	51	7	S.	0	5	26	9	°	7149301
	23	18	15	21	63		23	29	34	4		°	7449188	4	6	4	283	22	52	3	0	5	33	7	°	7148992
	24	18	16	3	46		23	29	24	3		°	7459818	4	3	2	283	27	53	0	0	5	40	6	°	7148683
	25	18	16	45	80		23	29	13	3		°	7470338	4	0	0	283	32	53	7	0	5	47	4	°	7148373
	26	18	17	28	64		23	29	1	3		°	7480748	3	56	8	283	37	54	5	0	5	54	3	°	7148064
	27	18	18	11	97		23	28	48	4		°	7491046	3	53	5	283	42	55	3	0	6	1	2	°	7147755
28	18	18	55	78	S.	23	28	34	5	0°	7501230	3	50	3	283	47	56	2	S.	0	6	8	0	°	7147445	
29	18	19	40	06		23	28	19	6		°	7511299	3	47	1	283	52	57	0	0	6	14	9	°	7147136	
30	18	20	24	81		23	28	3	7		°	7521252	3	43	9	283	57	57	9	0	6	21	8	°	7146826	
31	18	21	10	02		23	27	46	8		°	7531088	3	40	8	284	2	58	9	0	6	28	6	°	7146517	
Nov.	1	18	21	55	67		23	27	28	7		°	7540806	3	37	6	284	7	59	9	0	6	35	5	°	7146207
	2	18	22	41	77		23	27	9	6		°	7550405	3	34	4	284	13	1	0	0	6	42	3	°	7145897
	3	18	23	28	30	S.	23	26	49	4	0°	7559883	3	31	3	284	18	2	1	S.	0	6	49	2	°	7145588
	4	18	24	15	26		23	26	28	0		°	7569240	3	28	1	284	23	3	3	0	6	56	1	°	7145278
	5	18	25	2	63		23	26	5	5		°	7578476	3	25	0	284	28	4	4	0	7	2	9	°	7144969
	6	18	25	50	42		23	25	41	8		°	7587589	3	21	8	284	33	5	6	0	7	9	8	°	7144659
	7	18	26	38	61		23	25	17	0		°	7596579	3	18	7	284	38	6	9	0	7	16	6	°	7144349
	8	18	27	27	20		23	24	50	9		°	7605443	3	15	6	284	43	8	3	0	7	23	5	°	7144040
	9	18	28	16	18	S.	23	24	23	6	0°	7614182	3	12	5	284	48	9	7	S.	0	7	30	4	°	7143730
	10	18	29	5	54		23	23	55	1		°	7622795	3	9	4	284	53	11	1	0	7	37	2	°	7143421
	11	18	29	55	28		23	23	25	3		°	7631280	3	6	2	284	58	12	6	0	7	44	1	°	7143111
	12	18	30	45	40		23	22	54	3		°	7639637	3	3	1	285	3	14	1	0	7	51	0	°	7142801
	13	18	31	35	87		23	22	22	0		°	7647865	3	0	1	285	8	15	7	0	7	57	8	°	7142492
	14	18	32	26	71		23	21	48	4		°	7655963	2	57	0	285	13	17	3	0	8	4	7	°	7142182
	15	18	33	17	90	S.	23	21	13	5	0°	7663930	2	53	9	285	18	19	0	S.	0	8	11	5	°	7141873
	16	18	34	9	44		23	20	37	3		°	7671765	2	50	8	285	23	20	7	0	8	18	4	°	7141563
	17	18	35	1	31		23	19	59	7		°	7679468	2	47	7	285	28	22	5	0	8	25	3	°	7141253
	18	18	35	53	52		23	19	20	8		°	7687038	2	44	7	285	33	24	2	0	8	32	1	°	7140944
	19	18	36	46	05	S.	23	18	40	5	0°	7694473	2	41	6	285	38	26	0	S.	0	8	39	0	°	7140634

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 19	^{h m s} 18 36 46.05	^{° ' "} S. 23 18 40.5	0.7694473	^{h m} 2 41.6	^{° ' "} 285 38 26.0	^{° ' "} 8.0 8 39.0	0.7140634
20	18 37 38.90	23 17 58.8	.7701772	2 38.6	285 43 27.9	0 8 45.8	.7140325
21	18 38 32.06	23 17 15.7	.7708935	2 35.5	285 48 29.8	0 8 52.7	.7140015
22	18 39 25.53	23 16 31.2	.7715961	2 32.5	285 53 31.8	0 8 59.6	.7139705
23	18 40 19.30	23 15 45.3	.7722847	2 29.4	285 58 33.8	0 9 6.4	.7139396
24	18 41 13.36	23 14 57.9	.7729595	2 26.4	286 3 35.8	0 9 13.3	.7139086
25	18 42 7.70	S. 23 14 9.0	0.7736203	2 23.4	286 8 37.9	8.0 9 20.1	0.7138777
26	18 43 2.32	23 13 18.7	.7742671	2 20.3	286 13 40.0	0 9 27.0	.7138467
27	18 43 57.20	23 12 27.0	.7748997	2 17.3	286 18 42.2	0 9 33.9	.7138157
28	18 44 52.34	23 11 33.7	.7755181	2 14.3	286 23 44.4	0 9 40.7	.7137848
29	18 45 47.72	23 10 39.0	.7761222	2 11.3	286 28 46.7	0 9 47.6	.7137538
30	18 46 43.35	23 9 42.8	.7767121	2 8.3	286 33 49.0	0 9 54.4	.7137229
Dec. 1	18 47 39.21	S. 23 8 45.1	0.7772877	2 5.3	286 38 51.4	8.0 10 1.3	0.7136919
2	18 48 35.30	23 7 45.9	.7778490	2 2.3	286 43 53.8	0 10 8.1	.7136610
3	18 49 31.62	23 6 45.2	.7783960	1 59.3	286 48 56.2	0 10 15.0	.7136300
4	18 50 28.15	23 5 43.0	.7789286	1 56.3	286 53 58.7	0 10 21.8	.7135991
5	18 51 24.89	23 4 39.3	.7794469	1 53.3	286 59 1.2	0 10 28.7	.7135681
6	18 52 21.84	23 3 34.0	.7799508	1 50.3	287 4 3.8	0 10 35.5	.7135372
7	18 53 18.98	S. 23 2 27.2	0.7804402	1 47.3	287 9 6.4	8.0 10 42.4	0.7135062
8	18 54 16.32	23 1 18.9	.7809152	1 44.3	287 14 9.1	0 10 49.2	.7134753
9	18 55 13.83	23 0 9.0	.7813757	1 41.4	287 19 11.8	0 10 56.1	.7134443
10	18 56 11.53	22 58 57.6	.7818217	1 38.4	287 24 14.6	0 11 2.9	.7134134
11	18 57 9.40	22 57 44.6	.7822531	1 35.4	287 29 17.4	0 11 9.8	.7133825
12	18 58 7.43	22 56 30.1	.7826700	1 32.4	287 34 20.3	0 11 16.6	.7133515
13	18 59 5.62	S. 22 55 14.0	0.7830722	1 29.5	287 39 23.1	8.0 11 23.5	0.7133206
14	19 0 3.97	22 53 56.4	.7834596	1 26.5	287 44 26.0	0 11 30.3	.7132896
15	19 1 2.47	22 52 37.2	.7838323	1 23.6	287 49 29.0	0 11 37.2	.7132587
16	19 2 1.11	22 51 16.5	.7841903	1 20.6	287 54 32.0	0 11 44.0	.7132278
17	19 2 59.89	22 49 54.2	.7845334	1 17.6	287 59 35.1	0 11 50.9	.7131968
18	19 3 58.80	22 48 30.3	.7848616	1 14.7	288 4 38.2	0 11 57.7	.7131659
19	19 4 57.84	S. 22 47 4.9	0.7851749	1 11.7	288 9 41.3	8.0 12 4.6	0.7131350
20	19 5 56.99	22 45 38.0	.7854732	1 8.8	288 14 44.5	0 12 11.4	.7131041
21	19 6 56.25	22 44 9.5	.7857565	1 5.8	288 19 47.7	0 12 18.3	.7130731
22	19 7 55.62	22 42 39.5	.7860247	1 2.9	288 24 51.0	0 12 25.1	.7130422
23	19 8 55.08	22 41 7.9	.7862777	0 59.9	288 29 54.3	0 12 31.9	.7130113
24	19 9 54.63	22 39 34.8	.7865155	0 57.0	288 34 57.7	0 12 38.8	.7129804
25	19 10 54.26	S. 22 38 0.2	0.7867382	0 54.0	288 40 1.1	8.0 12 45.6	0.7129495
26	19 11 53.97	22 36 24.0	.7869458	0 51.1	288 45 4.6	0 12 52.5	.7129186
27	19 12 53.75	22 34 46.4	.7871382	0 48.2	288 50 8.1	0 12 59.3	.7128877
28	19 13 53.58	22 33 7.2	.7873155	0 45.2	288 55 11.6	0 13 6.1	.7128568
29	19 14 53.47	22 31 26.6	.7874776	0 42.3	289 0 15.2	0 13 13.0	.7128259
30	19 15 53.40	22 29 44.5	.7876247	0 39.3	289 5 18.8	0 13 19.8	.7127950
31	19 16 53.37	S. 22 28 0.9	0.7877566	0 36.4	289 10 22.5	8.0 13 26.7	0.7127641
32	19 17 53.38	S. 22 26 15.9	0.7878734	0 33.5	289 15 26.2	8.0 13 33.5	0.7127333

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Jan. 1	h m s 9 28 51.75	N.16 0 18.6	0.9222896	h m 14 41.0	o ' " 135 38 42.9	o ' " N.0 58 15.7	o.9616741
2	9 28 38.83	16 1 31.3	.9217655	14 36.9	135 40 53.5	0 58 21.0	.9616841
3	9 28 25.58	16 2 45.5	.9212539	14 32.7	135 43 4.2	0 58 26.2	.9616940
4	9 28 12.00	16 4 1.1	.9207549	14 28.5	135 45 14.8	0 58 31.4	.9617040
5	9 27 58.10	16 5 18.0	.9202688	14 24.4	135 47 25.4	0 58 36.6	.9617139
6	9 27 43.88	16 6 36.2	.9197958	14 20.2	135 49 36.0	0 58 41.9	.9617239
7	9 27 29.36	N.16 7 55.8	0.9193362	14 16.0	135 51 46.6	N.0 58 47.1	0.9617338
8	9 27 14.53	16 9 16.6	.9188902	14 11.8	135 53 57.1	0 58 52.3	.9617438
9	9 26 59.42	16 10 38.5	.9184580	14 7.7	135 56 7.7	0 58 57.5	.9617538
10	9 26 44.02	16 12 1.6	.9180397	14 3.5	135 58 18.3	0 59 2.8	.9617639
11	9 26 28.35	16 13 25.8	.9176356	13 59.3	136 0 28.9	0 59 8.0	.9617739
12	9 26 12.41	16 14 51.1	.9172458	13 55.1	136 2 39.5	0 59 13.2	.9617839
13	9 25 56.22	N.16 16 17.3	0.9168705	13 50.9	136 4 50.1	N.0 59 18.4	0.9617939
14	9 25 39.78	16 17 44.5	.9165099	13 46.7	136 7 0.6	0 59 23.6	.9618039
15	9 25 23.10	16 19 12.6	.9161641	13 42.5	136 9 11.1	0 59 28.8	.9618140
16	9 25 6.20	16 20 41.5	.9158333	13 38.2	136 11 21.6	0 59 34.0	.9618240
17	9 24 49.08	16 22 11.2	.9155177	13 34.0	136 13 32.1	0 59 39.2	.9618341
18	9 24 31.75	16 23 41.7	.9152174	13 29.8	136 15 42.6	0 59 44.4	.9618441
19	9 24 14.21	N.16 25 12.9	0.9149325	13 25.6	136 17 53.2	N.0 59 49.6	0.9618541
20	9 23 56.48	16 26 44.7	.9146632	13 21.4	136 20 3.7	0 59 54.8	.9618642
21	9 23 38.57	16 28 17.1	.9144096	13 17.1	136 22 14.2	1 0 0.0	.9618742
22	9 23 20.49	16 29 50.1	.9141719	13 12.9	136 24 24.7	1 0 5.2	.9618843
23	9 23 2.25	16 31 23.6	.9139502	13 8.7	136 26 35.2	1 0 10.4	.9618943
24	9 22 43.85	16 32 57.5	.9137447	13 4.4	136 28 45.6	1 0 15.6	.9619044
25	9 22 25.31	N.16 34 31.8	0.9135554	13 0.2	136 30 56.0	N.1 0 20.8	0.9619145
26	9 22 6.63	16 36 6.5	.9133824	12 55.9	136 33 6.5	1 0 25.9	.9619247
27	9 21 47.84	16 37 41.4	.9132260	12 51.7	136 35 16.9	1 0 31.1	.9619348
28	9 21 28.93	16 39 16.6	.9130861	12 47.4	136 37 27.3	1 0 36.3	.9619449
29	9 21 9.93	16 40 51.9	.9129629	12 43.2	136 39 37.8	1 0 41.5	.9619550
30	9 20 50.83	16 42 27.4	.9128564	12 38.9	136 41 48.2	1 0 46.7	.9619651
31	9 20 31.66	N.16 44 2.9	0.9127669	12 34.7	136 43 58.6	N.1 0 51.8	0.9619752
Feb. 1	9 20 12.43	16 45 38.4	.9126942	12 30.4	136 46 9.0	1 0 57.0	.9619854
2	9 19 53.14	16 47 13.8	.9126384	12 26.2	136 48 19.4	1 1 2.2	.9619955
3	9 19 33.81	16 48 49.2	.9125995	12 21.9	136 50 29.8	1 1 7.4	.9620057
4	9 19 14.44	16 50 24.4	.9125774	12 17.7	136 52 40.1	1 1 12.6	.9620158
5	9 18 55.06	16 51 59.4	.9125723	12 13.4	136 54 50.5	1 1 17.7	.9620260
6	9 18 35.67	N.16 53 34.2	0.9125841	12 9.2	136 57 0.8	N.1 1 22.9	0.9620361
7	9 18 16.28	16 55 8.6	.9126127	12 4.9	136 59 11.2	1 1 28.1	.9620463
8	9 17 56.91	16 56 42.7	.9126581	12 0.7	137 1 21.5	1 1 33.2	.9620565
9	9 17 37.57	16 58 16.4	.9127203	11 56.4	137 3 31.9	1 1 38.4	.9620667
10	9 17 18.26	16 59 49.6	.9127992	11 52.2	137 5 42.2	1 1 43.6	.9620769
11	9 16 59.01	17 1 22.2	.9128948	11 47.9	137 7 52.6	1 1 48.7	.9620872
12	9 16 39.82	N.17 2 54.2	0.9130070	11 43.7	137 10 2.9	N.1 1 53.9	0.9620974
13	9 16 20.70	17 4 25.6	.9131357	11 39.4	137 12 13.2	1 1 59.0	.9621076
14	9 16 1.67	17 5 56.4	.9132809	11 35.2	137 14 23.5	1 2 4.2	.9621178
15	9 15 42.72	17 7 26.4	.9134424	11 30.9	137 16 33.8	1 2 9.3	.9621281
16	9 15 23.88	N.17 8 55.7	0.9136202	11 26.7	137 18 44.1	N.1 2 14.5	0.9621383

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Feb. 16	^{h m s} 9 15 23.88	^{° ' "} N.17 8 55.7	[°] 0.9136202	^{h m} 11 26.7	^{° ' "} 137 18 44.1	^{° ' "} N.1 2 14.5	[°] 0.9621383
17	9 15 5.16	17 10 24.2	0.9138141	11 22.5	137 20 54.3	1 2 19.6	0.9621485
18	9 14 46.55	17 11 51.8	0.9140241	11 18.2	137 23 4.6	1 2 24.8	0.9621588
19	9 14 28.08	17 13 18.6	0.9142500	11 14.0	137 25 14.9	1 2 29.9	0.9621690
20	9 14 9.75	17 14 44.5	0.9144918	11 9.8	137 27 25.2	1 2 35.1	0.9621792
21	9 13 51.57	17 16 9.4	0.9147494	11 5.5	137 29 35.4	1 2 40.3	0.9621895
22	9 13 33.55	N.17 17 33.2	0.9150225	11 1.3	137 31 45.7	N.1 2 45.4	0.9621998
23	9 13 15.71	17 18 56.1	0.9153112	10 57.1	137 33 55.9	1 2 50.5	0.9622101
24	9 12 58.05	17 20 17.9	0.9156154	10 52.8	137 36 6.1	1 2 55.6	0.9622204
25	9 12 40.57	17 21 38.5	0.9159348	10 48.6	137 38 16.3	1 3 0.7	0.9622307
26	9 12 23.30	17 22 57.9	0.9162693	10 44.4	137 40 26.5	1 3 5.9	0.9622410
27	9 12 6.25	17 24 16.2	0.9166187	10 40.2	137 42 36.7	1 3 11.0	0.9622513
28	9 11 49.42	N.17 25 33.2	0.9169829	10 36.0	137 44 46.9	N.1 3 16.2	0.9622616
Mar. 1	9 11 32.83	17 26 48.8	0.9173616	10 31.8	137 46 57.1	1 3 21.3	0.9622719
2	9 11 16.48	17 28 3.2	0.9177547	10 27.6	137 49 7.3	1 3 26.5	0.9622822
3	9 11 0.38	17 29 16.2	0.9181620	10 23.4	137 51 17.5	1 3 31.6	0.9622925
4	9 10 44.54	17 30 27.8	0.9185832	10 19.2	137 53 27.7	1 3 36.7	0.9623028
5	9 10 28.98	17 31 37.9	0.9190181	10 15.0	137 55 37.9	1 3 41.8	0.9623131
6	9 10 13.69	N.17 32 46.6	0.9194665	10 10.8	137 57 48.0	N.1 3 46.9	0.9623235
7	9 9 58.69	17 33 53.8	0.9199282	10 6.6	137 59 58.1	1 3 52.0	0.9623339
8	9 9 43.99	17 34 59.5	0.9204030	10 2.5	138 2 8.3	1 3 57.1	0.9623442
9	9 9 29.59	17 36 3.7	0.9208905	9 58.3	138 4 18.4	1 4 2.3	0.9623546
10	9 9 15.50	17 37 6.3	0.9213906	9 54.1	138 6 28.5	1 4 7.4	0.9623650
11	9 9 1.72	17 38 7.3	0.9219029	9 50.0	138 8 38.6	1 4 12.5	0.9623754
12	9 8 48.27	N.17 39 6.6	0.9224273	9 45.8	138 10 48.8	N.1 4 17.6	0.9623857
13	9 8 35.15	17 40 4.4	0.9229635	9 41.7	138 12 58.9	1 4 22.7	0.9623961
14	9 8 22.37	17 41 0.5	0.9235111	9 37.5	138 15 9.0	1 4 27.8	0.9624065
15	9 8 9.92	17 41 54.9	0.9240700	9 33.4	138 17 19.1	1 4 32.9	0.9624169
16	9 7 57.83	17 42 47.6	0.9246400	9 29.3	138 19 29.2	1 4 38.0	0.9624273
17	9 7 46.09	17 43 38.6	0.9252207	9 25.2	138 21 39.3	1 4 43.1	0.9624377
18	9 7 34.71	N.17 44 27.9	0.9258120	9 21.0	138 23 49.3	N.1 4 48.2	0.9624482
19	9 7 23.69	17 45 15.5	0.9264136	9 16.9	138 25 59.4	1 4 53.3	0.9624586
20	9 7 13.04	17 46 1.4	0.9270253	9 12.8	138 28 9.5	1 4 58.4	0.9624690
21	9 7 2.76	17 46 45.5	0.9276468	9 8.7	138 30 19.5	1 5 3.5	0.9624795
22	9 6 52.86	17 47 27.8	0.9282778	9 4.6	138 32 29.6	1 5 8.6	0.9624899
23	9 6 43.35	17 48 8.3	0.9289181	9 0.5	138 34 39.7	1 5 13.7	0.9625003
24	9 6 34.22	N.17 48 47.0	0.9295674	8 56.5	138 36 49.7	N.1 5 18.8	0.9625108
25	9 6 25.49	17 49 23.9	0.9302255	8 52.4	138 38 59.7	1 5 23.9	0.9625213
26	9 6 17.15	17 49 58.9	0.9308921	8 48.3	138 41 9.7	1 5 29.0	0.9625318
27	9 6 9.22	17 50 32.1	0.9315670	8 44.3	138 43 19.7	1 5 34.1	0.9625423
28	9 6 1.69	17 51 3.4	0.9322499	8 40.2	138 45 29.7	1 5 39.1	0.9625527
29	9 5 54.58	17 51 32.8	0.9329405	8 36.1	138 47 39.8	1 5 44.2	0.9625632
30	9 5 47.88	N.17 52 0.4	0.9336385	8 32.1	138 49 49.8	N.1 5 49.3	0.9625737
31	9 5 41.59	17 52 26.0	0.9343436	8 28.1	138 51 59.8	1 5 54.4	0.9625841
Apr. 1	9 5 35.72	17 52 49.8	0.9350556	8 24.1	138 54 9.9	1 5 59.4	0.9625946
2	9 5 30.28	17 53 11.6	0.9357742	8 20.0	138 56 19.9	1 6 4.5	0.9626051
3	9 5 25.27	N.17 53 31.5	0.9364991	8 16.0	138 58 29.9	N.1 6 9.6	0.9626156

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.	Heliocentric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Apr. 3	h m s 9 5 25.27	N. 17 53 31.5	0.9364991	h m 8 16.0	138 58 29.9	N. 1 6 9.6	0.9626156
4	9 5 20.68	17 53 49.5	0.9372299	8 12.0	139 0 39.8	1 6 14.7	0.9626261
5	9 5 16.52	17 54 5.6	0.9379665	8 8.0	139 2 49.8	1 6 19.7	0.9626367
6	9 5 12.79	17 54 19.8	0.9387085	8 4.0	139 4 59.7	1 6 24.8	0.9626472
7	9 5 9.49	17 54 32.0	0.9394556	8 0.0	139 7 9.7	1 6 29.8	0.9626577
8	9 5 6.63	17 54 42.4	0.9402076	7 56.1	139 9 19.6	1 6 34.9	0.9626683
9	9 5 4.20	N. 17 54 50.8	0.9409641	7 52.1	139 11 29.6	N. 1 6 39.9	0.9626788
10	9 5 2.21	17 54 57.2	0.9417250	7 48.1	139 13 39.5	1 6 45.0	0.9626893
11	9 5 0.65	17 55 1.8	0.9424899	7 44.2	139 15 49.5	1 6 50.0	0.9626999
12	9 4 59.52	17 55 4.5	0.9432586	7 40.2	139 17 59.4	1 6 55.1	0.9627104
13	9 4 58.83	17 55 5.3	0.9440308	7 36.3	139 20 9.4	1 7 0.1	0.9627210
14	9 4 58.57	17 55 4.1	0.9448063	7 32.4	139 22 19.3	1 7 5.1	0.9627316
15	9 4 58.75	N. 17 55 1.1	0.9455848	7 28.4	139 24 29.2	N. 1 7 10.2	0.9627422
16	9 4 59.36	17 54 56.2	0.9463661	7 24.5	139 26 39.1	1 7 15.2	0.9627528
17	9 5 0.40	17 54 49.4	0.9471499	7 20.6	139 28 49.0	1 7 20.3	0.9627634
18	9 5 1.88	17 54 40.7	0.9479361	7 16.7	139 30 58.8	1 7 25.3	0.9627740
19	9 5 3.79	17 54 30.1	0.9487244	7 12.8	139 33 8.7	1 7 30.3	0.9627846
20	9 5 6.13	17 54 17.7	0.9495145	7 8.9	139 35 18.6	1 7 35.4	0.9627952
21	9 5 8.90	N. 17 54 3.4	0.9503063	7 5.0	139 37 28.5	N. 1 7 40.4	0.9628058
22	9 5 12.10	17 53 47.2	0.9510995	7 1.1	139 39 38.4	1 7 45.5	0.9628164
23	9 5 15.73	17 53 29.2	0.9518939	6 57.3	139 41 48.3	1 7 50.5	0.9628270
24	9 5 19.79	17 53 9.3	0.9526892	6 53.4	139 43 58.2	1 7 55.6	0.9628376
25	9 5 24.28	17 52 47.5	0.9534852	6 49.5	139 46 8.0	1 8 0.6	0.9628483
26	9 5 29.19	17 52 23.9	0.9542817	6 45.7	139 48 17.8	1 8 5.6	0.9628589
27	9 5 34.53	N. 17 51 58.4	0.9550785	6 41.9	139 50 27.7	N. 1 8 10.6	0.9628696
28	9 5 40.30	17 51 31.0	0.9558753	6 38.0	139 52 37.5	1 8 15.7	0.9628802
29	9 5 46.49	17 51 1.8	0.9566719	6 34.2	139 54 47.3	1 8 20.7	0.9628909
30	9 5 53.10	17 50 30.8	0.9574680	6 30.4	139 56 57.2	1 8 25.7	0.9629015
May 1	9 6 0.13	17 49 58.0	0.9582634	6 26.6	139 59 7.0	1 8 30.7	0.9629122
2	9 6 7.58	17 49 23.3	0.9590579	6 22.8	140 1 16.8	1 8 35.7	0.9629228
3	9 6 15.44	N. 17 48 46.9	0.9598513	6 19.0	140 3 26.7	N. 1 8 40.7	0.9629335
4	9 6 23.72	17 48 8.6	0.9606432	6 15.2	140 5 36.5	1 8 45.7	0.9629442
5	9 6 32.41	17 47 28.6	0.9614336	6 11.4	140 7 46.3	1 8 50.7	0.9629549
6	9 6 41.50	17 46 46.8	0.9622222	6 7.6	140 9 56.1	1 8 55.7	0.9629656
7	9 6 51.00	17 46 3.2	0.9630087	6 3.8	140 12 5.8	1 9 0.7	0.9629763
8	9 7 0.89	17 45 17.9	0.9637930	6 0.1	140 14 15.6	1 9 5.7	0.9629870
9	9 7 11.18	N. 17 44 30.9	0.9645749	5 56.3	140 16 25.4	N. 1 9 10.7	0.9629978
10	9 7 21.86	17 43 42.1	0.9653542	5 52.5	140 18 35.2	1 9 15.7	0.9630085
11	9 7 32.93	17 42 51.7	0.9661308	5 48.8	140 20 45.0	1 9 20.7	0.9630192
12	9 7 44.39	17 41 59.5	0.9669044	5 45.1	140 22 54.8	1 9 25.7	0.9630299
13	9 7 56.23	17 41 5.7	0.9676749	5 41.3	140 25 4.6	1 9 30.7	0.9630406
14	9 8 8.45	17 40 10.2	0.9684422	5 37.6	140 27 14.3	1 9 35.7	0.9630513
15	9 8 21.04	N. 17 39 13.1	0.9692061	5 33.9	140 29 24.1	N. 1 9 40.7	0.9630621
16	9 8 34.00	17 38 14.3	0.9699664	5 30.2	140 31 33.8	1 9 45.7	0.9630729
17	9 8 47.33	17 37 13.8	0.9707229	5 26.5	140 33 43.6	1 9 50.6	0.9630836
18	9 9 1.03	17 36 11.7	0.9714756	5 22.7	140 35 53.3	1 9 55.6	0.9630944
19	9 9 15.10	N. 17 35 8.0	0.9722243	5 19.0	140 38 3.1	N. 1 10 0.6	0.9631052

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
May 19	h m s	° ' "		h m	° ' "	° ' "	
	9 9 15.10	N.17 35 8.0	0.9722243	5 19.0	140 38 3.1	N.1 10 0.6	0.9631052
20	9 9 29.53	17 34 2.6	.9729688	5 15.4	140 40 12.8	1 10 5.6	.9631159
21	9 9 44.32	17 32 55.6	.9737089	5 11.7	140 42 22.6	1 10 10.6	.9631267
22	9 9 59.46	17 31 47.1	.9744446	5 8.0	140 44 32.3	1 10 15.5	.9631375
23	9 10 14.94	17 30 37.0	.9751756	5 4.3	140 46 42.0	1 10 20.5	.9631483
24	9 10 30.77	17 29 25.3	.9759018	5 0.7	140 48 51.7	1 10 25.5	.9631591
25	9 10 46.94	N.17 28 12.1	0.9766231	4 57.0	140 51 1.4	N.1 10 30.4	0.9631699
26	9 11 3.44	17 26 57.4	.9773394	4 53.3	140 53 11.1	1 10 35.4	.9631808
27	9 11 20.28	17 25 41.1	.9780504	4 49.7	140 55 20.8	1 10 40.3	.9631916
28	9 11 37.45	17 24 23.3	.9787559	4 46.0	140 57 30.5	1 10 45.3	.9632024
29	9 11 54.94	17 23 4.0	.9794559	4 42.4	140 59 40.2	1 10 50.2	.9632133
30	9 12 12.76	17 21 43.2	.9801502	4 38.8	141 1 49.9	1 10 55.2	.9632241
31	9 12 30.91	N.17 20 20.9	0.9808386	4 35.1	141 3 59.6	N.1 11 0.1	0.9632349
June 1	9 12 49.37	17 18 57.1	.9815210	4 31.5	141 6 9.3	1 11 5.1	.9632458
2	9 13 8.15	17 17 31.9	.9821972	4 27.9	141 8 19.0	1 11 10.1	.9632566
3	9 13 27.24	17 16 5.2	.9828672	4 24.3	141 10 28.7	1 11 15.0	.9632675
4	9 13 46.62	17 14 37.2	.9835307	4 20.7	141 12 38.3	1 11 20.0	.9632784
5	9 14 6.30	17 13 7.7	.9841878	4 17.1	141 14 48.0	1 11 24.9	.9632893
6	9 14 26.27	N.17 11 36.9	0.9848382	4 13.5	141 16 57.6	N.1 11 29.9	0.9633002
7	9 14 46.53	17 10 4.6	.9854819	4 9.9	141 19 7.2	1 11 34.8	.9633110
8	9 15 7.06	17 8 31.0	.9861188	4 6.3	141 21 16.9	1 11 39.8	.9633219
9	9 15 27.88	17 6 56.1	.9867487	4 2.8	141 23 26.5	1 11 44.7	.9633328
10	9 15 48.98	17 5 19.9	.9873716	3 59.1	141 25 36.1	1 11 49.7	.9633436
11	9 16 10.34	17 3 42.3	.9879874	3 55.5	141 27 45.8	1 11 54.6	.9633545
12	9 16 31.97	N.17 2 3.5	0.9885960	3 51.9	141 29 55.4	N.1 11 59.6	0.9633654
13	9 16 53.86	17 0 23.4	.9891974	3 48.4	141 32 5.0	1 12 4.5	.9633763
14	9 17 16.02	16 58 42.0	.9897914	3 44.8	141 34 14.6	1 12 9.4	.9633872
15	9 17 38.42	16 56 59.3	.9903780	3 41.3	141 36 24.1	1 12 14.4	.9633982
16	9 18 1.08	16 55 15.4	.9909570	3 37.7	141 38 33.7	1 12 19.3	.9634091
17	9 18 23.98	16 53 30.3	.9915285	3 34.2	141 40 43.3	1 12 24.2	.9634200
18	9 18 47.12	N.16 51 44.0	0.9920923	3 30.6	141 42 52.8	N.1 12 29.2	0.9634310
19	9 19 10.50	16 49 56.4	.9926484	3 27.1	141 45 2.4	1 12 34.1	.9634419
20	9 19 34.11	16 48 7.6	.9931965	3 23.5	141 47 12.0	1 12 39.0	.9634529
21	9 19 57.95	16 46 17.7	.9937367	3 20.0	141 49 21.5	1 12 44.0	.9634638
22	9 20 22.02	16 44 26.6	.9942689	3 16.5	141 51 31.1	1 12 48.9	.9634748
23	9 20 46.31	16 42 34.4	.9947929	3 12.9	141 53 40.6	1 12 53.8	.9634858
24	9 21 10.82	N.16 40 41.0	0.9953087	3 9.4	141 55 50.1	N.1 12 58.7	0.9634968
25	9 21 35.55	16 38 46.5	.9958162	3 5.9	141 57 59.7	1 13 3.7	.9635078
26	9 22 0.49	16 36 51.0	.9963152	3 2.4	142 0 9.2	1 13 8.6	.9635188
27	9 22 25.64	16 34 54.3	.9968058	2 58.8	142 2 18.7	1 13 13.5	.9635297
28	9 22 50.98	16 32 56.5	.9972878	2 55.3	142 4 28.2	1 13 18.4	.9635407
29	9 23 16.52	16 30 57.7	.9977611	2 51.8	142 6 37.8	1 13 23.3	.9635517
30	9 23 42.25	N.16 28 57.8	0.9982256	2 48.3	142 8 47.3	N.1 13 28.2	0.9635627
July 1	9 24 8.17	16 26 56.9	.9986814	2 44.8	142 10 56.8	1 13 33.1	.9635737
2	9 24 34.27	16 24 55.1	.9991283	2 41.3	142 13 6.3	1 13 38.0	.9635847
3	9 25 0.55	16 22 52.2	.9995662	2 37.8	142 15 15.7	1 13 42.9	.9635957
4	9 25 27.00	N.16 20 48.4	0.9999952	2 34.3	142 17 25.2	N.1 13 47.7	0.9636067

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
July 4	h m s 9 25 27.00	N.16 20 48.4	0.9999952	h m 2 34.3	0 1 4 142 17 25.2	0 1 4 N.1 13 47.7	0.9636067
5	9 25 53.62	16 18 43.6	1.00004151	2 30.9	142 19 34.7	1 13 52.6	0.9636178
6	9 26 20.40	16 16 37.9	0.0008260	2 27.4	142 21 44.1	1 13 57.5	0.9636288
7	9 26 47.34	16 14 31.4	0.0012277	2 23.9	142 23 53.5	1 14 2.3	0.9636399
8	9 27 14.44	16 12 23.9	0.0016203	2 20.4	142 26 3.0	1 14 7.2	0.9636509
9	9 27 41.69	16 10 15.5	0.0020036	2 16.9	142 28 12.4	1 14 12.1	0.9636620
10	9 28 9.08	N.16 8 6.3	1.0023777	2 13.4	142 30 21.8	N.1 14 17.0	0.9636730
11	9 28 36.62	16 5 56.2	0.0027425	2 10.0	142 32 31.3	1 14 21.9	0.9636841
12	9 29 4.29	16 3 45.3	0.0030981	2 6.5	142 34 40.7	1 14 26.8	0.9636951
13	9 29 32.10	16 1 33.6	0.0034443	2 3.0	142 36 50.1	1 14 31.6	0.9637062
14	9 30 0.04	15 59 21.0	0.0037811	1 59.6	142 38 59.5	1 14 36.5	0.9637173
15	9 30 28.10	15 57 7.7	0.0041085	1 56.1	142 41 8.8	1 14 41.4	0.9637284
16	9 30 56.29	N.15 54 53.7	1.0044264	1 52.6	142 43 18.2	N.1 14 46.2	0.9637395
17	9 31 24.59	15 52 38.9	0.0047348	1 49.2	142 45 27.6	1 14 51.1	0.9637506
18	9 31 53.01	15 50 23.4	0.0050337	1 45.7	142 47 36.9	1 14 56.0	0.9637617
19	9 32 21.55	15 48 7.2	0.0053229	1 42.3	142 49 46.3	1 15 0.9	0.9637728
20	9 32 50.20	15 45 50.3	0.0056024	1 38.8	142 51 55.7	1 15 5.7	0.9637839
21	9 33 18.94	15 43 32.7	0.0058723	1 35.3	142 54 5.1	1 15 10.6	0.9637950
22	9 33 47.79	N.15 41 14.4	1.0061324	1 31.9	142 56 14.4	N.1 15 15.5	0.9638061
23	9 34 16.74	15 38 55.5	0.0063827	1 28.4	142 58 23.7	1 15 20.3	0.9638172
24	9 34 45.78	15 36 35.9	0.0066232	1 25.0	143 0 33.0	1 15 25.2	0.9638284
25	9 35 14.90	15 34 15.8	0.0068538	1 21.5	143 2 42.3	1 15 30.0	0.9638395
26	9 35 44.10	15 31 55.0	0.0070744	1 18.1	143 4 51.5	1 15 34.9	0.9638507
27	9 36 13.39	15 29 33.7	0.0072851	1 14.6	143 7 0.8	1 15 39.7	0.9638618
28	9 36 42.74	N.15 27 11.8	1.0074858	1 11.2	143 9 10.1	N.1 15 44.6	0.9638730
29	9 37 12.17	15 24 49.4	0.0076765	1 7.7	143 11 19.4	1 15 49.4	0.9638841
30	9 37 41.66	15 22 26.5	0.0078571	1 4.3	143 13 28.7	1 15 54.3	0.9638953
31	9 38 11.21	15 20 3.1	0.0080275	1 0.9	143 15 37.9	1 15 59.1	0.9639064
Aug. 1	9 38 40.82	15 17 39.3	0.0081879	0 57.4	143 17 47.2	1 16 4.0	0.9639176
2	9 39 10.48	15 15 15.1	0.0083382	0 54.0	143 19 56.4	1 16 8.8	0.9639288
3	9 39 40.19	N.15 12 50.4	1.0084783	0 50.5	143 22 5.6	N.1 16 13.6	0.9639400
4	9 40 9.94	15 10 25.3	0.0086083	0 47.1	143 24 14.8	1 16 18.5	0.9639512
5	9 40 39.73	15 7 59.8	0.0087282	0 43.7	143 26 24.0	1 16 23.3	0.9639624
6	9 41 9.55	15 5 34.0	0.0088379	0 40.2	143 28 33.3	1 16 28.1	0.9639737
7	9 41 39.41	15 3 7.8	0.0089375	0 36.8	143 30 42.5	1 16 32.9	0.9639849
8	9 42 9.29	15 0 41.4	0.0090269	0 33.3	143 32 51.7	1 16 37.8	0.9639961
9	9 42 39.19	N.14 58 14.6	1.0091062	0 29.9	143 35 0.9	N.1 16 42.6	0.9640073
10	9 43 9.11	14 55 47.6	0.0091753	0 26.5	143 37 10.1	1 16 47.4	0.9640185
11	9 43 39.05	14 53 20.3	0.0092343	0 23.0	143 39 19.3	1 16 52.2	0.9640297
12	9 44 9.00	14 50 52.8	0.0092831	0 19.6	143 41 28.4	1 16 57.0	0.9640409
13	9 44 38.95	14 48 25.1	0.0093218	0 16.2	143 43 37.5	1 17 1.8	0.9640522
14	9 45 8.91	14 45 57.2	0.0093502	0 12.7	143 45 46.6	1 17 6.6	0.9640634
15	9 45 38.87	N.14 43 29.1	1.0093684	0 9.3	143 47 55.8	N.1 17 11.4	0.9640747
16	9 46 8.83	14 41 0.8	0.0093764	0 5.9	143 50 4.9	1 17 16.3	0.9640859
17	9 46 38.78	14 38 32.4	0.0093742	{ 0 2.3 }	143 52 14.1	1 17 21.1	0.9640972
18	9 47 8.73	14 36 3.8	0.0093618	23 55.5	143 54 23.2	1 17 25.9	0.9641085
19	9 47 38.66	N.14 33 35.2	1.0093390	23 52.1	143 56 32.3	N.1 17 30.7	0.9641197

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Aug. 19	h m s 9 47 38.66	N. 14 33 35.2	1.0093390	h m 23 52.1	0 1 1 143 56 32.3	N. 1 17 30.7	0.9641197
20	9 48 8.57	14 31 6.5	.0093060	23 48.7	143 58 41.5	1 17 35.5	.9641310
21	9 48 38.46	14 28 37.7	.0092627	23 45.2	144 0 50.6	1 17 40.3	.9641423
22	9 49 8.32	14 26 8.9	.0092090	23 41.8	144 2 59.6	1 17 45.1	.9641536
23	9 49 38.15	14 23 40.1	.0091450	23 38.4	144 5 8.6	1 17 49.9	.9641649
24	9 50 7.94	14 21 11.4	.0090707	23 34.9	144 7 17.7	1 17 54.7	.9641762
25	9 50 37.69	N. 14 18 42.7	1.0089861	23 31.5	144 9 26.7	N. 1 17 59.5	0.9641875
26	9 51 7.40	14 16 14.1	.0088911	23 28.1	144 11 35.8	1 18 4.3	.9641989
27	9 51 37.05	14 13 45.5	.0087858	23 24.6	144 13 44.8	1 18 9.1	.9642102
28	9 52 6.66	14 11 17.1	.0086702	23 21.2	144 15 53.8	1 18 13.9	.9642215
29	9 52 36.21	14 8 48.9	.0085443	23 17.7	144 18 2.9	1 18 18.6	.9642328
30	9 53 5.69	14 6 20.8	.0084082	23 14.3	144 20 12.0	1 18 23.4	.9642441
31	9 53 35.10	N. 14 3 53.0	1.0082618	23 10.8	144 22 21.0	N. 1 18 28.2	0.9642554
Sept. 1	9 54 4.45	14 1 25.3	.0081051	23 7.4	144 24 30.0	1 18 33.0	.9642667
2	9 54 33.72	13 58 57.9	.0079383	23 3.9	144 26 39.0	1 18 37.8	.9642781
3	9 55 2.91	13 56 30.8	.0077613	23 0.5	144 28 48.0	1 18 42.6	.9642895
4	9 55 32.02	13 54 4.0	.0075742	22 57.0	144 30 57.0	1 18 47.3	.9643009
5	9 56 1.03	13 51 37.4	.0073770	22 53.6	144 33 6.0	1 18 52.1	.9643122
6	9 56 29.96	N. 13 49 11.2	1.0071697	22 50.1	144 35 14.9	N. 1 18 56.8	0.9643236
7	9 56 58.79	13 46 45.4	.0069524	22 46.7	144 37 23.9	1 19 1.6	.9643350
8	9 57 27.53	13 44 19.9	.0067250	22 43.2	144 39 32.8	1 19 6.3	.9643463
9	9 57 56.16	13 41 54.9	.0064876	22 39.8	144 41 41.8	1 19 11.1	.9643577
10	9 58 24.69	13 39 30.3	.0062403	22 36.3	144 43 50.7	1 19 15.8	.9643691
11	9 58 53.11	13 37 6.1	.0059831	22 32.9	144 45 59.6	1 19 20.5	.9643805
12	9 59 21.41	N. 13 34 42.5	1.0057160	22 29.4	144 48 8.5	N. 1 19 25.2	0.9643919
13	9 59 49.60	13 32 19.4	.0054389	22 25.9	144 50 17.4	1 19 30.0	.9644033
14	10 0 17.66	13 29 56.8	.0051519	22 22.5	144 52 26.3	1 19 34.7	.9644148
15	10 0 45.60	13 27 34.7	.0048550	22 19.0	144 54 35.2	1 19 39.4	.9644262
16	10 1 13.41	13 25 13.3	.0045483	22 15.5	144 56 44.1	1 19 44.2	.9644376
17	10 1 41.09	13 22 52.4	.0042317	22 12.0	144 58 53.0	1 19 48.9	.9644490
18	10 2 8.63	N. 13 20 32.3	1.0039053	22 8.5	145 1 1.9	N. 1 19 53.7	0.9644605
19	10 2 36.03	13 18 12.8	.0035692	22 5.1	145 3 10.8	1 19 58.4	.9644719
20	10 3 3.28	13 15 54.0	.0032234	22 1.6	145 5 19.7	1 20 3.2	.9644833
21	10 3 30.38	13 13 35.9	.0028678	21 58.1	145 7 28.5	1 20 7.9	.9644947
22	10 3 57.33	13 11 18.6	.0025026	21 54.6	145 9 37.3	1 20 12.6	.9645062
23	10 4 24.11	13 9 2.0	.0021277	21 51.1	145 11 46.1	1 20 17.3	.9645177
24	10 4 50.73	N. 13 6 46.3	1.0017432	21 47.6	145 13 55.0	N. 1 20 22.1	0.9645291
25	10 5 17.18	13 4 31.4	.0013492	21 44.1	145 16 3.8	1 20 26.8	.9645406
26	10 5 43.45	13 2 17.4	.0009458	21 40.6	145 18 12.6	1 20 31.5	.9645521
27	10 6 9.55	13 0 4.2	.0005330	21 37.1	145 20 21.4	1 20 36.2	.9645635
28	10 6 35.46	12 57 52.0	1.0001109	21 33.6	145 22 30.3	1 20 41.0	.9645750
29	10 7 1.19	12 55 40.8	0.9996795	21 30.1	145 24 39.1	1 20 45.7	.9645865
30	10 7 26.72	N. 12 53 30.5	0.9992389	21 26.6	145 26 47.9	N. 1 20 50.4	0.9645980
Oct. 1	10 7 52.06	12 51 21.2	.9987892	21 23.1	145 28 56.7	1 20 55.1	.9646096
2	10 8 17.19	12 49 13.0	.9983305	21 19.6	145 31 5.4	1 20 59.8	.9646211
3	10 8 42.13	12 47 5.8	.9978628	21 16.1	145 33 14.2	1 21 4.5	.9646326
4	10 9 6.86	N. 12 44 59.8	0.9973863	21 12.5	145 35 22.9	N. 1 21 9.2	0.9646442

Saturn
Mars10. 3. 3. 28
10. 3. 23. 7513. 15. 2. 7 Mars
13. 15. 54. 0. SaturnDigitized by Google
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MEAN TIME.

Month and Day.	Apparent Right Ascension.		Apparent Declination.		Log. of True Dist. from the Earth.		Meridian Passage.	Heliocentric Longitude.		Heliocentric Latitude.		Log. of Rad. Vect.
	Noon.		Noon.		Noon.			Noon.		Noon.		
Oct.	4	h m s	° ' "	N. 12 44 59.8	0.9973863	21 12.5	145 35 22.9	N. 1 21 9.2	0.9646442			
	5	10 9 31.37	12 42 54.8	0.9969010	21 9.0	145 37 31.7	1 21 13.9	0.9646557				
	6	10 9 55.67	12 40 51.0	0.9964070	21 5.5	145 39 40.4	1 21 18.6	0.9646672				
	7	10 10 19.74	12 38 48.4	0.9959044	21 1.9	145 41 49.2	1 21 23.3	0.9646787				
	8	10 10 43.60	12 36 47.0	0.9953931	20 58.4	145 43 57.9	1 21 28.0	0.9646902				
	9	10 11 7.23	12 34 46.7	0.9948734	20 54.9	145 46 6.7	1 21 32.7	0.9647017				
	10	10 11 30.63	N. 12 32 47.7	0.9943453	20 51.3	145 48 15.5	N. 1 21 37.4	0.9647132				
	11	10 11 53.79	12 30 50.0	0.9938087	20 47.8	145 50 24.2	1 21 42.1	0.9647247				
	12	10 12 16.72	12 28 53.6	0.9932639	20 44.2	145 52 32.9	1 21 46.8	0.9647363				
	13	10 12 39.40	12 26 58.5	0.9927109	20 40.7	145 54 41.6	1 21 51.5	0.9647479				
	14	10 13 1.84	12 25 4.7	0.9921498	20 37.1	145 56 50.3	1 21 56.1	0.9647594				
	15	10 13 24.03	12 23 12.3	0.9915806	20 33.5	145 58 59.0	1 22 0.8	0.9647710				
	16	10 13 45.96	N. 12 21 21.3	0.9910035	20 30.0	146 1 7.7	N. 1 22 5.5	0.9647826				
	17	10 14 7.63	12 19 31.8	0.9904185	20 26.4	146 3 16.4	1 22 10.2	0.9647941				
	18	10 14 29.04	12 17 43.8	0.9898257	20 22.8	146 5 25.1	1 22 14.8	0.9648057				
	19	10 14 50.18	12 15 57.2	0.9892252	20 19.2	146 7 33.8	1 22 19.5	0.9648173				
	20	10 15 11.04	12 14 12.1	0.9886171	20 15.6	146 9 42.5	1 22 24.2	0.9648289				
	21	10 15 31.62	12 12 28.6	0.9880015	20 12.0	146 11 51.2	1 22 28.8	0.9648405				
	22	10 15 51.92	N. 12 10 46.7	0.9873785	20 8.4	146 13 59.8	N. 1 22 33.5	0.9648521				
	23	10 16 11.94	12 9 6.4	0.9867483	20 4.8	146 16 8.5	1 22 38.1	0.9648637				
	24	10 16 31.66	12 7 27.8	0.9861109	20 1.2	146 18 17.1	1 22 42.8	0.9648753				
	25	10 16 51.09	12 5 50.8	0.9854665	19 57.6	146 20 25.7	1 22 47.4	0.9648870				
	26	10 17 10.22	12 4 15.5	0.9848153	19 54.0	146 22 34.4	1 22 52.1	0.9648986				
	27	10 17 29.04	12 2 41.9	0.9841574	19 50.3	146 24 43.0	1 22 56.7	0.9649102				
	28	10 17 47.56	N. 12 1 10.1	0.9834930	19 46.7	146 26 51.6	N. 1 23 1.4	0.9649218				
	29	10 18 5.76	11 59 40.1	0.9828221	19 43.1	146 29 0.3	1 23 6.1	0.9649334				
	30	10 18 23.65	11 58 12.0	0.9821450	19 39.4	146 31 8.9	1 23 10.8	0.9649450				
Nov.	31	10 18 41.21	11 56 45.6	0.9814618	19 35.8	146 33 17.5	1 23 15.4	0.9649566				
	1	10 18 58.45	11 55 21.1	0.9807726	19 32.1	146 35 26.1	1 23 20.0	0.9649683				
	2	10 19 15.37	11 53 58.5	0.9800775	19 28.5	146 37 34.7	1 23 24.6	0.9649799				
	3	10 19 31.96	N. 11 52 37.8	0.9793769	19 24.8	146 39 43.3	N. 1 23 29.3	0.9649916				
	4	10 19 48.21	11 51 18.9	0.9786708	19 21.1	146 41 51.8	1 23 33.9	0.9650032				
	5	10 20 4.13	11 50 2.0	0.9779593	19 17.5	146 44 0.4	1 23 38.5	0.9650149				
	6	10 20 19.71	11 48 47.1	0.9772426	19 13.8	146 46 9.0	1 23 43.2	0.9650266				
	7	10 20 34.94	11 47 34.1	0.9765208	19 10.1	146 48 17.6	1 23 47.8	0.9650382				
	8	10 20 49.83	11 46 23.1	0.9757941	19 6.4	146 50 26.2	1 23 52.4	0.9650499				
	9	10 21 4.37	N. 11 45 14.2	0.9750626	19 2.7	146 52 34.8	N. 1 23 57.1	0.9650616				
	10	10 21 18.56	11 44 7.3	0.9743266	18 59.0	146 54 43.4	1 24 1.7	0.9650733				
	11	10 21 32.39	11 43 2.5	0.9735860	18 55.3	146 56 51.9	1 24 6.3	0.9650850				
	12	10 21 45.86	11 41 59.8	0.9728412	18 51.6	146 59 0.4	1 24 10.9	0.9650967				
	13	10 21 58.96	11 40 59.2	0.9720923	18 47.9	147 1 9.0	1 24 15.5	0.9651084				
	14	10 22 11.70	11 40 0.7	0.9713394	18 44.1	147 3 17.5	1 24 20.1	0.9651201				
	15	10 22 24.07	N. 11 39 4.4	0.9705827	18 40.4	147 5 26.0	N. 1 24 24.8	0.9651319				
	16	10 22 36.07	11 38 10.3	0.9698225	18 36.7	147 7 34.6	1 24 29.4	0.9651436				
	17	10 22 47.68	11 37 18.4	0.9690588	18 32.9	147 9 43.1	1 24 34.0	0.9651553				
	18	10 22 58.91	11 36 28.7	0.9682920	18 29.2	147 11 51.6	1 24 38.6	0.9651670				
	19	10 23 9.76	N. 11 35 41.3	0.9675221	18 25.4	147 14 0.2	N. 1 24 43.2	0.9651787				

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Nov. 19	h m s 10 23 9.76	N. 11 35 41.3	0.9675221	h m 18 25.4	0 1 N 147 14 0.2	N. 1 24 43.2	0.9651787
20	10 23 20.22	11 34 56.1	0.9667495	18 21.7	147 16 8.7	1 24 47.8	0.9651905
21	10 23 30.28	11 34 13.2	0.9659742	18 17.9	147 18 17.2	1 24 52.4	0.9652023
22	10 23 39.95	11 33 32.6	0.9651966	18 14.1	147 20 25.7	1 24 57.0	0.9652140
23	10 23 49.23	11 32 54.4	0.9644169	18 10.3	147 22 34.1	1 25 1.6	0.9652258
24	10 23 58.10	11 32 18.4	0.9636353	18 6.6	147 24 42.6	1 25 6.2	0.9652376
25	10 24 6.57	N. 11 31 44.8	0.9628520	18 2.8	147 26 51.1	N. 1 25 10.7	0.9652493
26	10 24 14.63	11 31 13.6	0.9620672	17 59.0	147 28 59.6	1 25 15.3	0.9652611
27	10 24 22.29	11 30 44.8	0.9612814	17 55.2	147 31 8.1	1 25 19.9	0.9652728
28	10 24 29.54	11 30 18.3	0.9604946	17 51.3	147 33 16.6	1 25 24.5	0.9652846
29	10 24 36.37	11 29 54.2	0.9597072	17 47.5	147 35 25.1	1 25 29.1	0.9652963
30	10 24 42.80	11 29 32.6	0.9589193	17 43.7	147 37 33.6	1 25 33.7	0.9653081
Dec. 1	10 24 48.81	N. 11 29 13.3	0.9581311	17 39.8	147 39 42.0	N. 1 25 38.2	0.9653199
2	10 24 54.41	11 28 56.5	0.9573430	17 36.0	147 41 50.4	1 25 42.8	0.9653317
3	10 24 59.59	11 28 42.1	0.9565552	17 32.1	147 43 58.8	1 25 47.3	0.9653435
4	10 25 4.36	11 28 30.0	0.9557679	17 28.4	147 46 7.2	1 25 51.9	0.9653554
5	10 25 8.71	11 28 20.4	0.9549814	17 24.4	147 48 15.7	1 25 56.4	0.9653672
6	10 25 12.64	11 28 13.3	0.9541958	17 20.6	147 50 24.1	1 26 1.0	0.9653790
7	10 25 16.15	N. 11 28 8.6	0.9534114	17 16.7	147 52 32.5	N. 1 26 5.6	0.9653908
8	10 25 19.24	11 28 6.3	0.9526284	17 12.8	147 54 40.9	1 26 10.2	0.9654026
9	10 25 21.91	11 28 6.5	0.9518471	17 8.9	147 56 49.3	1 26 14.8	0.9654144
10	10 25 24.15	11 28 9.0	0.9510677	17 5.0	147 58 57.7	1 26 19.3	0.9654262
11	10 25 25.97	11 28 14.0	0.9502905	17 1.1	148 1 6.1	1 26 23.8	0.9654381
12	10 25 27.37	11 28 21.5	0.9495157	16 57.2	148 3 14.5	1 26 28.4	0.9654499
13	10 25 28.34	N. 11 28 31.4	0.9487436	16 53.2	148 5 22.8	N. 1 26 32.9	0.9654618
14	10 25 28.89	11 28 43.8	0.9479744	16 49.3	148 7 31.2	1 26 37.5	0.9654736
15	10 25 29.01	11 28 58.6	0.9472084	16 45.4	148 9 39.6	1 26 42.0	0.9654855
16	10 25 28.70	11 29 15.9	0.9464460	16 41.4	148 11 47.9	1 26 46.6	0.9654973
17	10 25 27.97	11 29 35.6	0.9456873	16 37.5	148 13 56.3	1 26 51.1	0.9655092
18	10 25 26.81	11 29 57.7	0.9449327	16 33.6	148 16 4.7	1 26 55.7	0.9655210
19	10 25 25.22	N. 11 30 22.3	0.9441825	16 29.6	148 18 13.0	N. 1 27 0.2	0.9655329
20	10 25 23.21	11 30 49.3	0.9434370	16 25.6	148 20 21.3	1 27 4.7	0.9655448
21	10 25 20.77	11 31 18.7	0.9426965	16 21.7	148 22 29.6	1 27 9.2	0.9655567
22	10 25 17.90	11 31 50.5	0.9419612	16 17.7	148 24 37.9	1 27 13.7	0.9655686
23	10 25 14.62	11 32 24.7	0.9412315	16 13.7	148 26 46.2	1 27 18.3	0.9655805
24	10 25 10.91	11 33 1.3	0.9405077	16 9.7	148 28 54.5	1 27 22.8	0.9655924
25	10 25 6.79	N. 11 33 40.2	0.9397900	16 5.7	148 31 2.7	N. 1 27 27.3	0.9656043
26	10 25 2.26	11 34 21.4	0.9390788	16 1.7	148 33 11.0	1 27 31.8	0.9656162
27	10 24 57.31	11 35 4.9	0.9383744	15 57.6	148 35 19.3	1 27 36.4	0.9656281
28	10 24 51.96	11 35 50.7	0.9376770	15 53.6	148 37 27.6	1 27 40.9	0.9656400
29	10 24 46.20	11 36 38.7	0.9369869	15 49.6	148 39 35.9	1 27 45.4	0.9656519
30	10 24 40.03	11 37 29.0	0.9363043	15 45.5	148 41 44.1	1 27 49.9	0.9656638
31	10 24 33.47	N. 11 38 21.5	0.9356296	15 41.5	148 43 52.3	N. 1 27 54.4	0.9656758
32	10 24 26.51	N. 11 39 16.2	0.9349630	15 37.4	148 46 0.5	N. 1 27 58.9	0.9656877

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Jan. 1	h m s 13 21 13.56	S. 7 53 12.9	1.2682788	h m 18 32.9	0 1 7 198 42 13.6	N. 0 37 53.3	1.2647146
5	13 21 32.37	7 54 57.9	.2666836	18 17.5	198 45 18.2	0 37 51.8	.2647230
9	13 21 47.90	7 56 23.1	.2650703	18 2.0	198 48 22.7	0 37 50.4	.2647314
13	13 22 0.11	7 57 28.4	.2634467	17 46.5	198 51 27.2	0 37 49.0	.2647397
17	13 22 8.99	7 58 13.8	.2618209	17 30.9	198 54 31.7	0 37 47.5	.2647481
21	13 22 14.49	7 58 39.0	.2602002	17 15.3	198 57 36.1	0 37 46.1	.2647565
25	13 22 16.61	S. 7 58 44.0	1.2585925	16 59.6	199 0 40.6	N. 0 37 44.6	1.2647649
29	13 22 15.35	7 58 29.0	.2570059	16 43.8	199 3 45.0	0 37 43.2	.2647733
Feb. 2	13 22 10.75	7 57 54.2	.2554489	16 28.0	199 6 49.4	0 37 41.7	.2647818
6	13 22 2.85	7 56 59.9	.2539309	16 12.1	199 9 53.7	0 37 40.3	.2647902
10	13 21 51.73	7 55 46.7	.2524596	15 56.2	199 12 58.0	0 37 38.9	.2647987
14	13 21 37.51	7 54 15.2	.2510430	15 40.2	199 16 2.3	0 37 37.4	.2648072
18	13 21 20.30	S. 7 52 26.1	1.2496887	15 24.2	199 19 6.5	N. 0 37 36.0	1.2648157
22	13 21 0.21	7 50 20.1	.2484041	15 8.1	199 22 10.7	0 37 34.5	.2648242
26	13 20 37.38	7 47 58.1	.2471960	14 52.0	199 25 14.9	0 37 33.0	.2648327
Mar. 2	13 20 11.99	7 45 21.1	.2460721	14 35.9	199 28 19.1	0 37 31.6	.2648412
6	13 19 44.22	7 42 30.2	.2450393	14 19.7	199 31 23.2	0 37 30.1	.2648497
10	13 19 14.29	7 39 26.7	.2441037	14 3.5	199 34 27.3	0 37 28.7	.2648583
14	13 18 42.41	S. 7 36 11.9	1.2432702	13 47.2	199 37 31.4	N. 0 37 27.2	1.2648669
18	13 18 8.83	7 32 47.3	.2425431	13 30.9	199 40 35.5	0 37 25.7	.2648755
22	13 17 33.78	7 29 14.2	.2419267	13 14.6	199 43 39.5	0 37 24.2	.2648841
26	13 16 57.49	7 25 34.1	.2414247	12 58.3	199 46 43.6	0 37 22.8	.2648927
30	13 16 20.22	7 21 48.6	.2410399	12 41.9	199 49 47.6	0 37 21.3	.2649013
Apr. 3	13 15 42.25	7 17 59.2	.2407747	12 25.5	199 52 51.7	0 37 19.8	.2649100
7	13 15 3.86	S. 7 14 7.7	1.2406308	12 9.2	199 55 55.7	N. 0 37 18.4	1.2649187
11	13 14 25.32	7 10 15.7	.2406081	11 52.8	199 58 59.8	0 37 16.9	.2649273
15	13 13 46.90	7 6 24.8	.2407058	11 36.5	200 2 3.9	0 37 15.4	.2649360
19	13 13 8.86	7 2 36.7	.2409228	11 20.1	200 5 8.0	0 37 13.9	.2649447
23	13 12 31.46	6 58 52.9	.2412580	11 3.8	200 8 12.1	0 37 12.4	.2649534
27	13 11 54.93	6 55 14.8	.2417093	10 47.4	200 11 16.2	0 37 11.0	.2649621
May 1	13 11 19.54	S. 6 51 44.0	1.2422736	10 31.1	200 14 20.3	N. 0 37 9.5	1.2649708
5	13 10 45.54	6 48 22.1	.2429473	10 14.8	200 17 24.4	0 37 8.0	.2649796
9	13 10 13.16	6 45 10.5	.2437259	9 58.6	200 20 28.6	0 37 6.5	.2649883
13	13 9 42.61	6 42 10.5	.2446042	9 42.3	200 23 32.8	0 37 5.0	.2649970
17	13 9 14.06	6 39 23.1	.2455763	9 26.1	200 26 36.9	0 37 3.5	.2650058
21	13 8 47.70	6 36 49.5	.2466372	9 10.0	200 29 41.1	0 37 2.0	.2650146
25	13 8 23.70	S. 6 34 30.6	1.2477810	8 53.9	200 32 45.3	N. 0 37 0.5	1.2650234
29	13 8 2.21	6 32 27.4	.2490016	8 37.8	200 35 49.5	0 36 59.0	.2650322
June 2	13 7 43.38	6 30 40.9	.2502917	8 21.8	200 38 53.8	0 36 57.5	.2650411
6	13 7 27.35	6 29 11.8	.2516441	8 5.8	200 41 58.0	0 36 56.0	.2650499
10	13 7 14.19	6 28 0.6	.2530514	7 49.8	200 45 2.2	0 36 54.5	.2650587
14	13 7 3.97	6 27 7.6	.2545063	7 33.9	200 48 6.4	0 36 53.0	.2650676
18	13 6 56.76	S. 6 26 33.4	1.2560014	7 18.1	200 51 10.7	N. 0 36 51.5	1.2650765
22	13 6 52.63	6 26 18.2	.2575300	7 2.3	200 54 14.9	0 36 50.0	.2650854
26	13 6 51.61	6 26 22.2	.2590851	6 46.6	200 57 19.1	0 36 48.5	.2650943
30	13 6 53.74	6 26 45.7	.2606587	6 30.9	201 0 23.3	0 36 47.0	.2651032
July 4	13 6 59.03	S. 6 27 28.6	1.2622432	6 15.2	201 3 27.5	N. 0 36 45.5	1.2651121

MEAN TIME.

Month and Day.	Apparent Right Ascension.			Apparent Declination.			Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.		
	Noon.			Noon.			Noon.				Noon.			Noon.					
July	4	13 ^h 6 ^m 59 ^s .03	S. 6° 27' 28".6	1.2622432	6 ^h 15 ^m 2	201 3 27.5	N. 0° 36' 45".5	1.2651121											
	8	13 7 7.45	6 28 30.7	.2638311	5 59.6	201 6 31.6	0 36 43.9	.2651210											
	12	13 7 18.99	6 29 51.9	.2654159	5 44.1	201 9 35.8	0 36 42.4	.2651299											
	16	13 7 33.59	6 31 31.8	.2669908	5 28.6	201 12 39.9	0 36 40.9	.2651388											
	20	13 7 51.22	6 33 30.1	.2685495	5 13.2	201 15 44.0	0 36 39.4	.2651478											
	24	13 8 11.84	6 35 46.6	.2700856	4 57.8	201 18 48.0	0 36 37.9	.2651568											
	28	13 8 35.38	S. 6° 38' 20".8	1.2715925	4 42.5	201 21 52.0	N. 0° 36' 36".3	1.2651658											
	Aug.	1	13 9 1.78	6 41 12.1	.2730641	4 27.2	201 24 56.0	0 36 34.8	.2651748										
		5	13 9 30.95	6 44 19.7	.2744940	4 12.0	201 28 0.0	0 36 33.3	.2651838										
		9	13 10 2.77	6 47 43.2	.2758772	3 56.8	201 31 3.9	0 36 31.8	.2651928										
13		13 10 37.14	6 51 21.7	.2772085	3 41.6	201 34 7.8	0 36 30.2	.2652019											
17		13 11 13.96	6 55 14.6	.2784833	3 26.5	201 37 11.7	0 36 28.7	.2652110											
21		13 11 53.11	S. 6° 59' 21".2	1.2706968	3 11.4	201 40 15.6	N. 0° 36' 27".4	1.2652201											
25		13 12 34.50	7 3 40.8	.2808444	2 56.4	201 43 19.4	0 36 25.7	.2652291											
29		13 13 17.97	7 8 12.3	.2819215	2 41.4	201 46 23.2	0 36 24.1	.2652382											
Sept.		2	13 14 3.40	7 12 54.8	.2829239	2 26.4	201 49 26.9	0 36 22.6	.2652473										
		6	13 14 50.63	7 17 47.2	.2838479	2 11.4	201 52 30.7	0 36 21.0	.2652564										
	10	13 15 39.52	7 22 48.8	.2846907	1 56.5	201 55 34.4	0 36 19.5	.2652656											
	14	13 16 29.91	S. 7° 27' 58".9	1.2854500	1 41.6	201 58 38.1	N. 0° 36' 18".0	1.2652747											
	18	13 17 21.67	7 33 16.2	.2861224	1 26.8	202 1 41.7	0 36 16.4	.2652839											
	22	13 18 14.64	7 38 39.8	.2867051	1 11.9	202 4 45.4	0 36 14.9	.2652931											
	26	13 19 8.67	7 44 8.5	.2871957	0 57.1	202 7 49.1	0 36 13.3	.2653023											
	30	13 20 3.59	7 49 41.5	.2875924	0 42.3	202 10 52.7	0 36 11.8	.2653115											
	Oct.	4	13 20 59.19	7 55 17.5	.2878935	0 27.5	202 13 56.4	0 36 10.2	.2653207										
		8	13 21 55.32	S. 8° 0' 55".5	1.2880980	0 12.7	202 17 0.0	N. 0° 36' 8".7	1.2653299										
12		13 22 51.81	8 6 34.4	.2882054	23 54.2	202 20 3.7	0 36 7.1	.2653392											
16		13 23 48.48	8 12 13.2	.2882150	23 39.4	202 23 7.3	0 36 5.6	.2653485											
20		13 24 45.18	8 17 51.0	.2882159	23 24.6	202 26 11.0	0 36 4.0	.2653577											
24		13 25 41.72	8 23 26.6	.2879378	23 9.8	202 29 14.6	0 36 2.4	.2653669											
28		13 26 37.90	8 28 58.9	.2876512	22 55.0	202 32 18.3	0 36 0.9	.2653762											
Nov.		1	13 27 33.53	S. 8° 34' 26".8	1.2872669	22 40.2	202 35 22.0	N. 0° 35' 59".3	1.2653854										
		5	13 28 28.42	8 39 49.1	.2867861	22 25.4	202 38 25.7	0 35 57.8	.2653946										
		9	13 29 22.40	8 45 4.9	.2862104	22 10.5	202 41 29.5	0 35 56.2	.2654039										
	13	13 30 15.31	8 50 13.3	.2855419	21 55.7	202 44 33.2	0 35 54.6	.2654132											
	17	13 31 6.97	8 55 13.3	.2847820	21 40.8	202 47 37.0	0 35 53.0	.2654225											
	21	13 31 57.18	9 0 3.7	.2839329	21 25.9	202 50 40.8	0 35 51.5	.2654318											
	25	13 32 45.76	S. 9° 4' 43".5	1.2829975	21 11.0	202 53 44.6	N. 0° 35' 49".9	1.2654412											
	29	13 33 32.53	9 9 11.9	.2819793	20 56.0	202 56 48.4	0 35 48.3	.2654506											
	Dec.	3	13 34 17.31	9 13 28.0	.2808825	20 41.0	202 59 52.2	0 35 46.7	.2654600										
		7	13 34 59.95	9 17 31.0	.2797111	20 26.0	203 2 56.0	0 35 45.2	.2654693										
11		13 35 40.31	9 21 19.8	.2784695	20 10.9	203 5 59.8	0 35 43.6	.2654787											
15		13 36 18.22	9 24 53.7	.2771624	19 55.8	203 9 3.6	0 35 42.0	.2654881											
19		13 36 53.55	S. 9° 28' 12".0	1.2757947	19 40.7	203 12 7.4	N. 0° 35' 40".4	1.2654975											
23		13 37 26.14	9 31 13.9	.2743714	19 25.5	203 15 11.2	0 35 38.8	.2655069											
27		13 37 55.86	9 33 58.8	.2728991	19 10.2	203 18 15.0	0 35 37.3	.2655163											
31		13 38 22.59	9 36 26.1	.2717847	18 54.9	203 21 18.8	0 35 35.7	.2655258											
35		13 38 46.23	S. 9° 38' 35".4	1.2698350	18 39.6	203 24 22.6	N. 0° 35' 34".1	1.2655353											

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
Jan. 1	h m s 3 52 23.41	N. 18 28 13.7	1.4635634	h m 9 5.6	61 9 0.4	8.1 39 58.8	1.4745327
5	3 52 4.65	18 27 27.5	.4642780	8 49.5	61 10 28.5	1 39 57.9	.4745332
9	3 51 47.65	18 26 47.3	.4650430	8 33.5	61 11 56.6	1 39 56.9	.4745337
13	3 51 32.51	18 26 13.5	.4658539	8 17.5	61 13 24.7	1 39 56.0	.4745343
17	3 51 19.32	18 25 46.1	.4667059	8 1.6	61 14 52.8	1 39 55.0	.4745349
21	3 51 8.17	18 25 25.5	.4675948	7 45.7	61 16 20.8	1 39 54.4	.4745355
25	3 50 59.12	N. 18 25 11.8	1.4685160	7 29.8	61 17 48.8	8.1 39 53.1	1.4745360
29	3 50 52.24	18 25 5.1	.4694646	7 14.0	61 19 16.8	1 39 52.1	.4745365
Feb. 2	3 50 47.59	18 25 5.7	.4704354	6 58.2	61 20 44.8	1 39 51.1	.4745370
6	3 50 45.21	18 25 13.5	.4714232	6 42.4	61 22 12.8	1 39 50.2	.4745376
10	3 50 45.11	18 25 28.5	.4724227	6 26.7	61 23 40.7	1 39 49.2	.4745382
14	3 50 47.30	18 25 50.5	.4734288	6 11.0	61 25 8.6	1 39 48.2	.4745387
18	3 50 51.77	N. 18 26 19.7	1.4744366	5 55.4	61 26 36.4	8.1 39 47.2	1.4745392
22	3 50 58.50	18 26 55.8	.4754415	5 39.7	61 28 4.3	1 39 46.3	.4745397
26	3 51 7.48	18 27 38.7	.4764392	5 24.2	61 29 32.1	1 39 45.3	.4745403
Mar. 2	3 51 18.67	18 28 28.2	.4774245	5 8.6	61 30 59.9	1 39 44.3	.4745409
6	3 51 32.05	18 29 24.0	.4783927	4 53.1	61 32 27.7	1 39 43.3	.4745414
10	3 51 47.55	18 30 26.0	.4793393	4 37.6	61 33 55.5	1 39 42.4	.4745420
14	3 52 5.09	N. 18 31 33.7	1.4802603	4 22.2	61 35 23.3	8.1 39 41.4	1.4745425
18	3 52 24.60	18 32 46.9	.4811517	4 6.8	61 36 51.1	1 39 40.4	.4745431
22	3 52 46.00	18 34 5.2	.4820100	3 51.4	61 38 18.9	1 39 39.4	.4745437
26	3 53 9.23	18 35 28.4	.4828320	3 36.1	61 39 46.7	1 39 38.4	.4745442
30	3 53 34.18	18 36 56.0	.4836141	3 20.8	61 41 14.5	1 39 37.4	.4745448
Apr. 3	3 54 0.77	18 38 27.7	.4843530	3 5.5	61 42 42.3	1 39 36.4	.4745454
7	3 54 28.89	N. 18 40 3.0	1.4850451	2 50.2	61 44 10.1	8.1 39 35.5	1.4745460
11	3 54 58.42	18 41 41.6	.4856885	2 35.0	61 45 37.9	1 39 34.5	.4745466
15	3 55 29.25	18 43 23.0	.4862811	2 19.8	61 47 5.7	1 39 33.5	.4745471
19	3 56 1.27	18 45 6.9	.4868210	2 4.6	61 48 33.6	1 39 32.5	.4745477
23	3 56 34.36	18 46 52.8	.4873059	1 49.4	61 50 1.5	1 39 31.5	.4745483
27	3 57 8.43	18 48 40.4	.4877341	1 34.2	61 51 29.4	1 39 30.5	.4745489
May 1	3 57 43.33	N. 18 50 29.1	1.4881039	1 19.1	61 52 57.3	8.1 39 29.5	1.4745495
5	3 58 18.95	18 52 18.5	.4884140	1 4.0	61 54 25.2	1 39 28.5	.4745501
9	3 58 55.15	18 54 8.3	.4886636	0 48.8	61 55 53.2	1 39 27.5	.4745507
13	3 59 31.80	18 55 58.1	.4888520	0 33.7	61 57 21.2	1 39 26.5	.4745513
17	4 0 8.78	18 57 47.5	.4889790	0 18.6	61 58 49.3	1 39 25.5	.4745519
21	4 0 45.96	18 59 36.2	.4890442	{ 0 3.5 }	62 0 17.3	1 39 24.5	.4745525
25	4 1 23.23	N. 19 1 23.7	1.4890473	23 44.6	62 1 45.3	8.1 39 23.5	1.4745530
29	4 2 0.47	19 3 9.7	.4889884	23 29.5	62 3 13.4	1 39 22.5	.4745536
June 2	4 2 37.53	19 4 53.8	.4888677	23 14.4	62 4 41.5	1 39 21.5	.4745542
6	4 3 14.28	19 6 35.7	.4886856	22 59.3	62 6 9.6	1 39 20.5	.4745548
10	4 3 50.59	19 8 15.1	.4884432	22 44.1	62 7 37.7	1 39 19.5	.4745554
14	4 4 26.35	19 9 51.6	.4881418	22 29.0	62 9 5.8	1 39 18.5	.4745559
18	4 5 1.44	N. 19 11 25.0	1.4877826	22 13.9	62 10 33.9	8.1 39 17.5	1.4745565
22	4 5 35.75	19 12 55.0	.4873667	21 58.7	62 12 2.1	1 39 16.5	.4745571
26	4 6 9.15	19 14 21.3	.4868949	21 43.5	62 13 30.2	1 39 15.5	.4745577
30	4 6 41.54	19 15 43.7	.4863696	21 28.3	62 14 58.3	1 39 14.5	.4745583
July 4	4 7 12.78	N. 19 17 1.8	1.4857931	21 13.1	62 16 26.5	8.1 39 13.5	1.4745589

MEAN TIME.

Month and Day.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	I.og. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
July 4	^h 7 ^m 12 ^s 78	N. 19 17 1' 8	1 4857931	^h 21 ^m 13 1	^o 62 16 26 5	^o 8. 1 39 13 5	1 4745589
8	4 7 42 76	19 18 15 4	4851675	20 57 9	62 17 54 6	1 39 12 5	4745595
12	4 8 11 39	19 19 24 4	4844949	20 42 6	62 19 23 7	1 39 11 5	4745601
16	4 8 38 58	19 20 28 7	4837776	20 27 3	62 20 50 8	1 39 10 4	4745607
20	4 9 4 23	19 21 28 1	4830186	20 12 0	62 22 18 8	1 39 9 4	4745613
24	4 9 28 23	19 22 22 3	4822208	19 56 7	62 23 46 9	1 39 8 4	4745619
28	4 9 50 50	N. 19 23 11 1	1 4813874	19 41 3	62 25 14 9	8. 1 39 7 4	1 4745626
Aug. 1	4 10 10 96	19 23 54 4	4805218	19 25 9	62 26 42 9	1 39 6 4	4745633
5	4 10 29 51	19 24 32 2	4796272	19 10 5	62 28 10 9	1 39 5 4	4745639
9	4 10 46 10	19 25 4 3	4787076	18 55 0	62 29 38 9	1 39 4 3	4745646
13	4 11 0 68	19 25 30 7	4777670	18 39 5	62 31 6 8	1 39 3 3	4745653
17	4 11 13 18	19 25 51 4	4768094	18 24 0	62 32 34 8	1 39 2 3	4745660
21	4 11 23 57	N. 19 26 6 2	1 4758385	18 8 5	62 34 2 7	8. 1 39 1 3	1 4745667
25	4 11 31 78	19 26 15 2	4748579	17 52 9	62 35 30 5	1 39 0 2	4745673
29	4 11 37 80	19 26 18 3	4738725	17 37 2	62 36 58 4	1 38 59 2	4745680
Sept. 2	4 11 41 59	19 26 15 5	4728870	17 21 6	62 38 26 3	1 38 58 2	4745688
6	4 11 43 15	19 26 7 0	4719063	17 5 9	62 39 54 1	1 38 57 2	4745695
10	4 11 42 51	19 25 52 8	4709346	16 50 1	62 41 21 9	1 38 56 1	4745701
14	4 11 39 65	N. 19 25 33 0	1 4699764	16 34 3	62 42 49 7	8. 1 38 55 1	1 4745708
18	4 11 34 59	19 25 7 6	4690365	16 18 5	62 44 17 5	1 38 54 1	4745714
22	4 11 27 37	19 24 36 9	4681195	16 2 7	62 45 45 3	1 38 53 0	4745721
26	4 11 18 01	19 24 0 9	4672301	15 46 8	62 47 13 1	1 38 52 0	4745728
30	4 11 6 59	19 23 20 0	4663731	15 30 8	62 48 40 9	1 38 51 0	4745735
Oct. 4	4 10 53 18	19 22 34 3	4655529	15 14 9	62 50 8 7	1 38 49 9	4745742
8	4 10 37 86	N. 19 21 44 0	1 4647748	14 58 9	62 51 36 5	8. 1 38 48 9	1 4745749
12	4 10 20 72	19 20 49 4	4640424	14 42 9	62 53 4 4	1 38 47 9	4745757
16	4 10 1 87	19 19 50 8	4633590	14 26 8	62 54 32 2	1 38 46 8	4745764
20	4 9 41 40	19 18 48 6	4627294	14 10 8	62 56 0 1	1 38 45 8	4745771
24	4 9 19 44	19 17 43 1	4621571	13 54 7	62 57 28 0	1 38 44 7	4745778
28	4 8 56 13	19 16 34 6	4616457	13 38 6	62 58 55 9	1 38 43 7	4745785
Nov. 1	4 8 31 62	N. 19 15 23 5	1 4611084	13 22 4	63 0 23 8	8. 1 38 42 6	1 4745793
5	4 8 6 08	19 14 10 4	4608177	13 6 3	63 1 51 8	1 38 41 6	4745800
9	4 7 39 66	19 12 55 7	4605059	12 50 1	63 3 19 8	1 38 40 6	4745807
13	4 7 12 53	19 11 39 7	4602645	12 33 9	63 4 47 8	1 38 39 5	4745814
17	4 6 44 85	19 10 23 1	4600956	12 17 7	63 6 15 8	1 38 38 5	4745822
21	4 6 16 79	19 9 6 1	4600007	12 1 5	63 7 43 9	1 38 37 4	4745829
25	4 5 48 55	N. 19 7 49 4	1 4599806	11 45 3	63 9 11 0	8. 1 38 36 4	1 4745836
29	4 5 20 31	19 6 33 5	4600356	11 29 1	63 10 40 1	1 38 35 3	4745843
Dec. 3	4 4 52 28	19 5 18 9	4601650	11 12 9	63 12 8 2	1 38 34 3	4745850
7	4 4 24 63	19 4 6 2	4603684	10 56 8	63 13 36 3	1 38 33 2	4745857
11	4 3 57 53	19 2 55 7	4606444	10 40 6	63 15 4 5	1 38 32 1	4745865
15	4 3 31 16	19 1 48 0	4609916	10 24 4	63 16 32 6	1 38 31 1	4745872
19	4 3 5 67	N. 19 0 43 5	1 4614084	10 8 3	63 18 0 8	8. 1 38 30 0	1 4745879
23	4 2 41 24	18 59 42 8	4618928	9 52 2	63 19 28 9	1 38 29 0	4745887
27	4 2 18 05	18 58 46 2	4624416	9 36 1	63 20 57 1	1 38 27 9	4745894
31	4 1 56 25	18 57 54 2	4630514	9 20 0	63 22 25 3	1 38 26 9	4745901
35	4 1 35 98	N. 18 57 7 3	1 4637187	9 3 9	63 23 53 4	8. 1 38 25 8	1 4745908

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass ^r Mer.	Apparent Declination.	Semidiameter.	Hor. Par.	Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass ^r Mer.	Apparent Declination.	Semidiameter.	Hor. Par.
Jan. 1	h m s		° ' "	"	"	Feb. 16	h m s		° ' "	"	"
2	18 59 41.54	0.17	8. 24 40 56.5	2.3	6.2	17	21 39 42.62	0.36	8. 10 6 2.0	5.2	13.9
3	19 6 50.80	0.17	24 32 58.7	2.4	6.2	18	21 35 44.00	0.36	10 30 51.1	5.2	13.8
4	19 14 0.51	0.17	24 23 28.6	2.4	6.2	19	21 32 3.28	0.35	10 55 52.7	5.2	13.8
5	19 21 10.48	0.17	24 12 25.2	2.4	6.3	20	21 28 44.36	0.35	11 20 36.7	5.2	13.6
6	19 28 20.53	0.17	23 59 48.3	2.4	6.3	21	21 25 50.21	0.35	11 44 38.3	5.1	13.5
7	19 35 30.42	0.18	23 45 36.8	2.4	6.3	22	21 23 22.96	0.34	12 7 36.2	5.1	13.3
8	19 42 39.95	0.18	23 29 50.4	2.4	6.4	23	21 21 23.83	0.34	12 29 13.6	5.0	13.2
9	19 49 48.88	0.18	23 12 28.7	2.4	6.4	24	21 19 53.40	0.34	12 49 17.9	4.9	13.0
10	19 56 56.92	0.18	22 53 31.8	2.4	6.5	25	21 18 51.61	0.33	13 7 39.8	4.8	12.8
11	20 4 3.78	0.18	22 32 59.5	2.5	6.5	26	21 18 17.94	0.33	13 24 12.8	4.7	12.5
12	20 11 9.14	0.18	22 10 52.1	2.5	6.6	27	21 18 11.47	0.32	13 38 52.5	4.7	12.3
13	20 18 12.62	0.18	21 47 10.4	2.5	6.6	28	21 18 31.13	0.31	13 51 37.0	4.6	12.1
14	20 25 13.80	0.18	21 21 55.0	2.5	6.7	29	21 19 15.62	0.31	14 2 25.1	4.5	11.9
15	20 32 12.24	0.18	20 55 7.4	2.6	6.8	Mar. 1	21 20 23.50	0.30	14 11 17.0	4.4	11.7
16	20 39 7.40	0.18	20 26 49.3	2.6	6.8	2	21 21 53.37	0.30	14 18 13.6	4.3	11.4
17	20 45 58.70	0.18	19 57 3.4	2.6	6.9	3	21 23 43.76	0.29	14 23 16.5	4.2	11.2
18	20 52 45.44	0.19	19 25 51.9	2.6	7.0	4	21 25 53.28	0.29	14 26 27.2	4.2	11.0
19	20 59 26.87	0.19	18 53 18.9	2.7	7.1	5	21 28 20.54	0.28	14 27 47.6	4.1	10.8
20	21 6 2.13	0.19	18 19 29.3	2.7	7.2	6	21 31 4.26	0.28	14 27 20.0	4.0	10.6
21	21 12 30.20	0.19	17 44 28.4	2.8	7.3	7	21 34 3.20	0.27	14 25 6.3	4.0	10.4
22	21 18 49.97	0.20	17 8 23.6	2.8	7.4	8	21 37 16.23	0.27	14 21 8.9	3.9	10.3
23	21 25 0.16	0.20	16 31 22.4	2.9	7.5	9	21 40 42.26	0.26	14 15 29.6	3.8	10.1
24	21 30 59.32	0.20	15 53 34.8	2.9	7.7	10	21 44 20.32	0.26	14 8 10.7	3.7	9.9
25	21 36 45.83	0.21	15 15 12.0	3.0	7.9	11	21 48 9.48	0.25	13 59 14.1	3.7	9.7
26	21 42 17.85	0.21	14 36 27.1	3.1	8.1	12	21 52 8.89	0.25	13 48 41.7	3.6	9.6
27	21 47 33.42	0.22	13 57 35.6	3.1	8.3	13	21 56 17.84	0.24	13 36 35.1	3.6	9.4
28	21 52 30.34	0.22	13 18 54.8	3.2	8.5	14	22 0 35.57	0.24	13 22 56.4	3.5	9.3
29	21 57 6.21	0.23	12 40 43.8	3.3	8.7	15	22 5 1.51	0.24	13 7 47.0	3.5	9.1
30	22 1 18.55	0.23	12 3 23.7	3.4	9.0	16	22 9 35.07	0.23	12 51 8.5	3.4	9.0
31	22 5 4.73	0.24	11 27 18.2	3.5	9.2	17	22 14 15.69	0.23	12 33 2.4	3.4	8.9
Feb. 1	22 8 22.10	0.24	10 52 51.7	3.6	9.5	18	22 19 2.96	0.23	12 13 30.3	3.3	8.8
2	22 11 8.00	0.25	10 20 30.3	3.7	9.8	19	22 23 56.43	0.22	11 52 33.4	3.3	8.6
3	22 13 19.96	0.26	9 50 40.3	3.8	10.1	20	22 28 55.75	0.22	11 30 12.9	3.2	8.5
4	22 14 55.68	0.27	9 23 48.3	4.0	10.4	21	22 34 0.61	0.21	11 6 30.6	3.1	8.4
5	22 15 53.33	0.27	9 0 19.1	4.1	10.7	22	22 39 10.68	0.21	10 41 27.4	3.1	8.3
6	22 16 11.56	0.28	8 40 36.7	4.2	11.0	23	22 44 25.74	0.21	10 15 4.2	3.1	8.2
7	22 15 49.66	0.29	8 25 0.9	4.3	11.4	24	22 49 45.55	0.21	9 47 22.7	3.1	8.1
8	22 14 47.77	0.30	8 13 48.2	4.5	11.7	25	22 55 9.91	0.21	9 18 24.0	3.0	8.0
9	22 13 6.98	0.31	8 7 9.3	4.6	12.1	26	23 0 38.71	0.20	8 48 9.0	3.0	7.9
10	22 10 49.41	0.32	8 5 8.2	4.7	12.5	27	23 6 11.78	0.20	8 16 38.8	3.0	7.8
11	22 7 58.21	0.32	8 7 42.4	4.8	12.8	28	23 11 49.07	0.20	7 43 54.8	2.9	7.8
12	22 4 37.59	0.33	8 14 41.7	4.9	13.1	29	23 17 30.46	0.20	7 9 57.7	2.9	7.7
13	22 0 52.65	0.34	8 25 48.7	5.0	13.3	30	23 23 15.96	0.20	6 34 48.7	2.9	7.6
14	22 11 56.26	0.34	8 28 28.3	5.1	13.5	31	23 29 5.52	0.19	5 58 29.1	2.8	7.5
15	22 13 54.35	0.35	8 19 19.8	5.2	13.7	Apr. 1	23 34 59.19	0.19	5 20 59.8	2.8	7.4
			8 9 41 59.5	5.2	13.8	2	23 40 56.97	0.19	5 44 21.9	2.8	7.4

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass ^g Mer.	Apparent Declination.	Semidiameter.	Hor. Par.	Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass ^g Mer.	Apparent Declination.	Semidiameter.	Hor. Par.
Apr. 3	h m s	s	° ' " "	"	"	May 19	h m s	s	° ' " "	"	"
4	23 46 58.95	0.18	S. 4 2 36.5	2.8	7.3	20	5 18 13.76	0.26	N. 25 26 52.5	3.6	9.5
5	23 53 5.17	0.18	3 21 45.1	2.7	7.2	21	5 23 48.57	0.27	25 29 45.4	3.7	9.7
6	23 59 15.76	0.18	2 39 48.8	2.7	7.2	22	5 29 7.40	0.28	25 30 50.1	3.8	10.0
7	0 5 30.81	0.18	1 56 49.0	2.7	7.1	23	5 34 9.77	0.28	25 30 11.9	3.9	10.2
8	0 11 50.49	0.18	1 12 47.2	2.7	7.1	24	5 38 55.30	0.29	25 27 56.4	3.9	10.4
9	0 18 14.93	0.18	0 27 44.9	2.7	7.0	25	5 43 23.57	0.30	25 24 9.4	4.0	10.7
10	0 24 44.30	0.18	N. 0 18 16.0	2.6	7.0	26	5 47 34.19	0.30	N. 25 18 56.2	4.1	10.9
11	0 31 18.81	0.17	1 5 13.5	2.6	6.9	27	5 51 26.76	0.31	25 12 22.3	4.2	11.2
12	0 37 58.63	0.17	1 53 5.5	2.6	6.9	28	5 55 0.92	0.32	25 4 32.9	4.3	11.5
13	0 44 43.97	0.17	2 41 49.4	2.6	6.8	29	5 58 16.30	0.33	24 55 33.1	4.4	11.7
14	0 51 35.05	0.17	3 31 22.3	2.6	6.8	30	6 1 12.54	0.34	24 45 28.1	4.5	12.0
15	0 58 32.04	0.17	4 21 41.1	2.6	6.8	31	6 3 49.30	0.35	24 34 22.9	4.6	12.3
16	1 5 35.18	0.17	N. 5 12 42.1	2.5	6.7	June 1	6 6 6.33	0.36	N. 24 22 22.4	4.7	12.6
17	1 12 44.66	0.17	6 4 20.9	2.5	6.7	2	6 8 3.35	0.36	24 9 31.6	4.9	12.8
18	1 20 0.62	0.17	6 56 33.1	2.5	6.7	3	6 9 40.22	0.36	23 55 55.2	5.0	13.1
19	1 27 23.22	0.17	7 49 12.9	2.5	6.7	4	6 10 56.80	0.37	23 41 38.0	5.1	13.4
20	1 34 52.53	0.17	8 42 14.1	2.5	6.6	5	6 11 53.05	0.37	23 26 44.8	5.2	13.7
21	1 42 28.58	0.17	9 35 29.8	2.5	6.6	6	6 12 29.07	0.38	23 11 20.8	5.3	13.9
22	1 50 11.38	0.17	N. 10 28 52.3	2.5	6.6	7	6 12 45.04	0.39	N. 22 55 30.5	5.4	14.2
23	1 58 0.78	0.17	11 22 12.4	2.5	6.6	8	6 12 41.30	0.39	22 39 19.2	5.5	14.4
24	2 5 56.59	0.17	12 15 20.6	2.5	6.7	9	6 12 18.35	0.40	22 22 52.1	5.6	14.7
25	* * *	*	* * *	*	*	10	6 11 36.89	0.40	22 6 14.9	5.6	14.9
26	2 13 58.52	0.17	13 8 6.5	2.5	6.7	11	6 10 37.80	0.41	21 49 33.2	5.7	15.1
27	2 22 6.08	0.17	14 0 18.6	2.5	6.7	12	6 9 22.17	0.41	21 32 53.0	5.8	15.3
28	2 30 18.76	0.18	N. 14 51 44.9	2.5	6.7	13	6 7 51.27	0.42	N. 21 16 20.7	5.9	15.5
29	2 38 35.84	0.18	15 42 13.0	2.6	6.8	14	6 6 6.63	0.42	21 0 2.6	5.9	15.7
30	2 46 56.50	0.18	16 31 30.2	2.6	6.8	15	6 4 9.94	0.42	20 44 6.1	6.0	15.8
May 1	2 55 19.82	0.18	17 19 24.0	2.6	6.9	16	6 2 3.14	0.42	20 28 38.3	6.0	15.8
2	3 3 44.73	0.18	18 5 41.8	2.6	6.9	17	5 59 48.28	0.43	20 13 46.4	6.0	15.9
3	3 12 10.09	0.19	18 50 11.8	2.6	7.0	18	5 57 27.61	0.43	19 59 37.9	6.0	15.9
4	3 20 34.69	0.19	N. 19 32 43.2	2.7	7.1	19	{ 5 55 3.45 } { 5 48 10.43 }	N. { 19 46 00.3 } { 18 34 10.7 }	{ 6.0 16.0 } { 6.0 15.9 }		
5	3 28 57.30	0.19	20 13 6.6	2.7	7.2	20	5 50 14.13	0.43	19 22 46.1	6.0	15.9
6	3 37 16.64	0.20	20 51 13.6	2.7	7.3	21	5 47 53.82	0.42	19 12 42.8	6.0	15.8
7	3 45 31.48	0.20	21 26 57.4	2.8	7.4	22	5 45 39.49	0.42	19 3 56.9	5.9	15.6
8	3 53 40.60	0.20	22 0 13.4	2.8	7.5	23	5 43 33.50	0.41	18 56 33.2	5.9	15.5
9	4 1 42.81	0.21	22 30 57.8	2.9	7.6	24	5 41 37.46	0.41	18 50 35.7	5.8	15.3
10	4 9 37.08	0.21	N. 22 59 8.8	2.9	7.7	25	5 39 53.73	0.40	N. 18 46 7.8	5.7	15.1
11	4 17 22.33	0.22	23 24 45.7	3.0	7.8	26	5 38 23.89	0.40	18 43 11.3	5.6	14.9
12	4 24 57.67	0.22	23 47 49.5	3.0	8.0	27	5 37 9.44	0.39	18 41 47.3	5.5	14.6
13	4 32 22.20	0.23	24 8 21.8	3.1	8.1	28	5 36 11.74	0.38	18 41 55.7	5.4	14.4
14	4 39 35.17	0.23	24 26 25.6	3.2	8.3	29	5 35 31.89	0.38	18 43 35.1	5.3	14.1
15	4 46 35.86	0.24	24 42 4.8	3.2	8.5	30	5 35 10.86	0.37	18 46 43.2	5.2	13.8
16	4 53 23.61	0.24	N. 24 55 23.5	3.3	8.7	July 1	5 35 9.45	0.36	N. 18 51 17.0	5.1	13.5
17	4 59 57.79	0.25	25 6 26.3	3.4	8.9	2	5 35 28.27	0.35	18 57 12.5	5.0	13.2
18	5 6 17.89	0.25	25 15 18.4	3.4	9.1	3	5 36 7.81	0.34	19 4 24.3	4.9	12.9
	5 12 23.38	0.26	N. 25 22 5.3	3.5	9.3		5 37 8.46	0.34	N. 19 12 47.2	4.8	12.6

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass ^{re} Mer.	Apparent Declination.	Semidiameter.	Hor. Par.	Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass ^{re} Mer.	Apparent Declination.	Semidiameter.	Hor. Par.
July 4	h m s	s	° ' " "	" "		Aug. 19	h m s	s	° ' " "	" "	
5	5 38 30.46	0.33	N.19 22 14.9	4.6	12.3	20	10 40 41.26	0.17	N. 9 48 19.8	2.5	6.6
6	5 40 14.05	0.32	19 32 40.5	4.5	12.0	21	10 47 16.68	0.17	9 3 10.6	2.5	6.6
7	5 42 19.34	0.31	19 43 56.4	4.4	11.7	22	10 53 44.83	0.17	8 17 51.8	2.5	6.7
8	5 44 46.40	0.30	19 55 54.9	4.3	11.4	23	11 0 5.98	0.17	7 32 27.3	2.5	6.7
9	5 47 35.25	0.30	20 8 27.3	4.2	11.1	24	11 6 20.37	0.17	6 47 0.8	2.5	6.7
10	5 50 45.88	0.29	20 21 25.0	4.1	10.8	25	11 12 28.28	0.17	6 1 35.6	2.6	6.8
11	5 54 18.23	0.28	N.20 34 38.5	4.0	10.5	26	11 18 29.89	0.17	N. 5 16 14.8	2.6	6.8
12	5 58 12.24	0.28	20 47 58.1	3.9	10.3	27	11 24 25.45	0.17	4 31 1.6	2.6	6.8
13	6 2 27.78	0.27	21 1 14.0	3.8	10.0	28	11 30 15.16	0.17	3 45 58.5	2.6	6.9
14	6 7 4.71	0.26	21 14 15.3	3.7	9.8	29	11 35 59.24	0.18	3 1 8.1	2.6	6.9
15	6 12 2.85	0.26	21 26 51.2	3.6	9.5	30	11 41 37.88	0.18	2 16 33.0	2.6	7.0
16	6 17 21.93	0.25	21 38 50.1	3.5	9.3	31	11 47 11.22	0.18	1 32 15.4	2.7	7.0
17	6 23 1.66	0.24	N.21 50 0.7	3.4	9.0	Sept. 1	11 52 39.41	0.18	N. 0 48 17.7	2.7	7.1
18	6 29 1.62	0.24	22 0 10.8	3.3	8.8	2	11 58 2.60	0.18	N. 0 4 41.7	2.7	7.2
19	6 35 21.32	0.23	22 9 8.5	3.2	8.6	3	12 3 20.91	0.18	S. 0 38 30.1	2.7	7.2
20	6 42 0.14	0.23	22 16 41.4	3.2	8.4	4	12 8 34.42	0.18	1 21 15.6	2.7	7.3
21	6 48 57.31	0.22	22 22 37.5	3.1	8.2	5	12 13 43.20	0.18	2 3 33.1	2.8	7.3
22	6 56 11.90	0.22	22 26 44.9	3.0	8.0	6	12 18 47.30	0.19	2 45 20.4	2.8	7.4
23	7 3 42.88	0.21	N.22 28 52.7	3.0	7.9	7	12 23 46.76	0.19	S. 3 26 35.4	2.8	7.5
24	7 11 28.96	0.21	22 28 50.2	2.9	7.8	8	12 28 41.59	0.19	4 7 16.3	2.9	7.6
25	7 19 28.74	0.21	22 26 28.1	2.9	7.6	9	12 33 31.76	0.19	4 47 20.6	2.9	7.7
26	7 27 40.64	0.20	22 21 38.5	2.8	7.5	10	12 38 17.19	0.20	5 26 46.5	2.9	7.7
27	7 36 2.94	0.20	22 14 15.0	2.8	7.3	11	12 42 57.87	0.20	6 5 31.5	3.0	7.8
28	7 44 33.80	0.20	22 4 13.1	2.7	7.2	12	12 47 33.65	0.20	6 43 33.7	3.0	7.9
29	7 53 11.38	0.19	N.21 51 30.0	2.7	7.1	13	12 52 4.38	0.20	S. 7 20 50.3	3.0	8.0
30	8 1 53.70	0.19	21 36 5.4	2.6	7.0	14	12 56 29.88	0.21	7 57 18.9	3.1	8.1
31	8 10 38.91	0.19	21 18 0.5	2.6	6.9	15	13 0 49.95	0.21	8 32 56.7	3.1	8.2
Aug. 1	8 19 25.15	0.19	20 57 18.8	2.6	6.9	16	13 5 42.29	0.21	9 7 40.7	3.1	8.3
2	8 28 10.72	0.18	20 34 5.5	2.6	6.8	17	13 9 18.59	0.22	9 41 28.0	3.2	8.4
3	8 36 54.05	0.18	20 8 27.2	2.5	6.7	18	13 13 14.46	0.22	10 14 14.9	3.2	8.6
4	8 45 33.76	0.18	N.19 40 31.3	2.5	6.7	19	13 17 9.49	0.22	S. 10 45 57.8	3.3	8.7
5	8 54 8.57	0.18	19 10 26.9	2.5	6.7	20	13 20 57.16	0.23	11 16 32.6	3.3	8.8
6	9 2 37.46	0.18	18 38 23.0	2.5	6.6	21	13 24 36.91	0.23	11 45 55.1	3.4	9.0
7	* * *	*	* * *	*	*	22	13 28 8.08	0.23	12 14 0.0	3.4	9.1
8	9 10 59.60	0.17	18 4 29.2	2.5	6.6	23	13 31 29.93	0.24	12 40 42.0	3.5	9.3
9	9 19 14.29	0.17	17 28 55.0	2.5	6.5	24	13 34 41.68	0.24	13 5 55.3	3.6	9.4
10	9 27 21.01	0.17	N.16 51 50.1	2.5	6.5	25	13 37 42.39	0.25	S. 13 29 33.3	3.6	9.6
11	9 35 19.45	0.17	16 13 23.9	2.5	6.5	26	13 40 31.05	0.25	13 51 28.6	3.7	9.8
12	9 43 9.32	0.17	15 33 45.3	2.5	6.5	27	13 43 6.57	0.26	14 11 33.5	3.8	9.9
13	9 50 50.50	0.17	14 53 2.7	2.5	6.5	28	13 45 27.71	0.26	14 29 38.5	3.8	10.1
14	9 58 22.99	0.17	14 11 24.1	2.5	6.5	29	13 47 33.10	0.27	14 45 34.1	3.9	10.3
15	10 5 46.83	0.17	13 28 57.1	2.5	6.5	30	13 49 21.35	0.28	14 59 9.4	4.0	10.6
16	10 13 2.09	0.17	N.12 45 48.3	2.5	6.5	Oct. 1	13 50 50.93	0.28	S. 15 10 12.9	4.1	10.8
17	10 20 8.97	0.17	12 2 4.5	2.5	6.5	2	13 52 0.23	0.29	15 18 30.9	4.2	11.0
18	10 27 7.64	0.17	11 17 51.7	2.5	6.6	3	13 52 47.66	0.29	15 23 49.8	4.2	11.2
19	10 33 58.33	0.17	N.10 33 15.0	2.5	6.6	4	13 53 11.56	0.30	S. 15 25 54.8	4.3	11.5

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass st Mer.	Apparent Declination.	Semidiameter.	Hor. Par.	Month and Day.	Apparent Right Ascension.	Sid. Time of Sem. pass st Mer.	Apparent Declination.	Semidiameter.	Hor. Par.
Oct.	h m s	s	° ' "	" "	" "	Nov.	h m s	s	° ' "	" "	" "
4	13 53 10.41	0.30	S. 15 24 30.3	4.4	11.7	18	14 58 53.91	0.17	S. 16 0 12.1	2.5	6.5
5	13 52 42.74	0.31	15 19 20.7	4.5	11.9	19	15 5 6.92	0.17	16 33 20.5	2.5	6.5
6	13 51 47.45	0.32	15 10 10.9	4.6	12.2	20	15 11 22.01	0.17	17 5 47.8	2.4	6.4
7	13 50 23.74	0.32	14 56 47.2	4.7	12.4	21	15 17 39.18	0.17	17 37 31.5	2.4	6.4
8	13 48 31.36	0.33	14 38 58.3	4.8	12.6	22	15 23 58.37	0.17	18 8 29.1	2.4	6.4
9	13 46 30.70	0.33	14 16 37.6	4.8	12.8	23	15 30 19.54	0.17	18 38 37.8	2.4	6.3
10	13 43 22.97	0.34	S. 13 49 43.5	4.9	13.0	24	15 36 42.65	0.17	S. 19 7 55.3	2.4	6.3
11	13 40 10.48	0.34	13 18 23.2	5.0	13.1	25	15 43 7.71	0.17	19 36 19.4	2.4	6.3
12	13 36 36.47	0.34	12 42 52.7	5.0	13.2	26	15 49 34.69	0.17	20 3 48.4	2.4	6.2
13	13 32 45.40	0.34	12 3 40.0	5.0	13.3	27	15 56 3.59	0.17	20 30 20.1	2.3	6.2
14	13 28 42.76	0.34	11 21 24.9	5.0	13.3	28	16 2 34.42	0.17	20 55 53.7	2.3	6.2
15	$\left\{ \begin{smallmatrix} 13 & 24 & 24.92 \\ 13 & 26 & 24.92 \end{smallmatrix} \right\}$	$\left\{ \begin{smallmatrix} 0.34 \\ 0.34 \end{smallmatrix} \right\}$	$\left\{ \begin{smallmatrix} 10 & 26 & 28.8 \\ 9 & 21 & 21.1 \end{smallmatrix} \right\}$	$\left\{ \begin{smallmatrix} 5.0 \\ 4.8 \end{smallmatrix} \right\}$	$\left\{ \begin{smallmatrix} 13.3 \\ 13.3 \end{smallmatrix} \right\}$	29	16 9 7.17	0.17	21 20 24.4	2.3	6.2
16	13 16 31.98	0.33	S. 9 5 47.0	5.0	13.1	30	16 15 41.88	0.17	S. 21 43 53.8	2.3	6.1
17	13 12 51.37	0.33	8 21 21.6	4.9	12.9	Dec. 1	16 22 18.51	0.17	22 6 19.0	2.3	6.1
18	13 9 33.81	0.32	7 39 16.8	4.8	12.7	2	16 28 57.08	0.17	22 27 38.7	2.3	6.1
19	13 6 45.00	0.32	7 0 37.2	4.7	12.4	3	16 35 37.59	0.17	22 47 51.3	2.3	6.1
20	13 4 29.62	0.31	6 26 17.4	4.6	12.1	4	16 42 20.03	0.17	23 6 55.2	2.3	6.1
21	13 2 51.07	0.30	5 57 0.2	4.5	11.8	5	16 49 4.37	0.17	23 24 49.0	2.3	6.1
22	13 1 51.33	0.29	S. 5 33 15.3	4.3	11.5	6	16 55 50.61	0.17	S. 23 41 31.3	2.3	6.1
23	13 1 31.24	0.29	5 15 18.8	4.2	11.1	7	* * *	*	* * *	*	*
24	13 1 50.45	0.28	5 3 15.9	4.1	10.8	8	17 2 38.69	0.17	23 57 0.4	2.3	6.1
25	13 2 47.70	0.27	4 57 0.5	4.0	10.5	9	17 9 28.62	0.17	24 11 15.4	2.3	6.1
26	13 4 21.01	0.26	4 56 18.7	3.8	10.2	10	17 16 20.32	0.17	24 24 14.4	2.3	6.1
27	13 6 27.96	0.25	5 0 50.4	3.7	9.9	11	17 23 13.74	0.17	24 35 56.3	2.3	6.1
28	13 9 5.74	0.24	S. 5 10 11.5	3.6	9.6	12	17 30 8.82	0.17	S. 24 46 19.3	2.3	6.1
29	13 12 11.45	0.24	5 23 55.2	3.5	9.3	13	17 37 5.48	0.17	24 55 22.2	2.3	6.1
30	13 15 42.14	0.23	5 41 33.4	3.4	9.0	14	17 44 3.62	0.17	25 3 3.7	2.3	6.2
31	13 19 34.99	0.22	6 2 38.7	3.3	8.8	15	17 51 3.15	0.17	25 9 22.5	2.3	6.2
Nov. 1	13 23 47.32	0.22	6 26 44.0	3.2	8.6	16	17 58 3.96	0.17	25 14 17.1	2.3	6.2
2	13 28 16.70	0.21	6 53 23.8	3.2	8.4	17	18 5 5.89	0.17	25 17 46.4	2.4	6.2
3	13 33 0.86	0.21	S. 7 22 14.6	3.1	8.2	18	18 12 8.81	0.17	S. 25 19 49.0	2.4	6.3
4	13 37 57.88	0.20	7 52 54.5	3.0	8.0	19	18 19 12.58	0.17	25 20 23.8	2.4	6.3
5	13 43 5.95	0.20	8 25 3.7	3.0	7.8	20	18 26 16.97	0.18	25 19 29.4	2.4	6.3
6	13 48 23.60	0.19	8 58 25.0	2.9	7.7	21	18 33 21.80	0.18	25 17 5.1	2.4	6.4
7	13 53 49.48	0.19	9 32 41.9	2.8	7.5	22	18 40 26.84	0.18	25 13 9.7	2.4	6.4
8	13 59 22.47	0.19	10 7 40.5	2.8	7.4	23	18 47 31.82	0.18	25 7 42.1	2.4	6.4
9	14 5 1.63	0.19	S. 10 43 8.4	2.7	7.3	24	18 54 36.46	0.18	S. 25 0 42.1	2.5	6.5
10	14 10 46.13	0.18	11 18 54.4	2.7	7.2	25	19 1 40.45	0.18	24 52 8.6	2.5	6.5
11	14 16 35.30	0.18	11 54 49.3	2.7	7.1	26	19 8 43.41	0.18	24 42 1.2	2.5	6.6
12	14 22 28.60	0.18	12 30 44.3	2.6	7.0	27	19 15 45.01	0.18	24 30 19.6	2.5	6.6
13	14 28 25.55	0.18	13 6 31.6	2.6	6.9	28	19 22 44.76	0.19	24 17 3.8	2.5	6.7
14	14 34 25.75	0.18	13 42 5.2	2.6	6.8	29	19 29 42.22	0.19	24 2 14.1	2.6	6.8
15	14 40 28.92	0.17	S. 14 17 19.1	2.5	6.7	30	19 36 36.81	0.19	S. 23 45 50.8	2.6	6.9
16	14 46 34.79	0.17	14 52 7.8	2.5	6.7	31	19 43 27.95	0.19	23 27 55.2	2.6	6.9
17	14 52 43.18	0.17	S. 15 26 26.7	2.5	6.6	32	19 50 14.96	0.19	S. 23 8 28.6	2.7	7.0

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^r Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
Jan. 1	h m s	h m s	s	s	° ' "	° ' "	"	"	"
3	21 44 29.85	21 49 5.04	+11.50	0.55	8. 15 26 33.7	8. 15 0 57.9	+63.5	8.0	8.5
5	21 53 38.65	21 58 10.70	11.37	0.56	14 35 0.0	14 8 41.0	65.4	8.1	8.6
7	22 2 41.17	22 7 10.08	11.24	0.56	13 42 1.5	13 15 2.6	67.1	8.2	8.7
9	22 11 37.45	22 16 3.29	11.11	0.57	12 47 45.0	12 20 9.4	68.6	8.3	8.8
11	22 20 27.62	22 24 50.43	10.98	0.57	11 52 16.8	11 24 7.9	70.0	8.4	8.9
13	22 29 11.77	22 33 31.65	10.86	0.58	10 55 43.5	10 27 4.4	71.3	8.5	9.1
15	22 37 50.07	22 42 7.06	+10.74	0.58	8. 9 58 11.4	8. 9 29 5.3	+72.4	8.6	9.2
17	22 46 22.63	22 50 36.82	10.62	0.59	8 59 46.8	8 30 16.9	73.5	8.7	9.3
19	22 54 49.63	22 59 1.09	10.50	0.60	8 0 36.3	7 30 45.6	74.4	8.9	9.5
21	23 3 11.23	23 7 20.06	10.39	0.61	7 0 45.5	6 30 37.0	75.2	9.0	9.6
23	23 11 27.60	23 15 33.88	10.29	0.62	6 0 20.8	5 29 57.4	75.8	9.2	9.8
25	23 19 38.92	23 23 42.77	10.19	0.62	4 59 27.9	4 28 52.7	76.3	9.3	9.9
27	23 27 45.44	23 31 46.93	+10.09	0.63	3 58 12.4	3 27 27.9	+76.8	9.5	10.1
29	23 35 47.26	23 39 46.44	9.99	0.64	2 56 39.9	2 25 49.3	77.1	9.7	10.3
31	23 43 44.51	23 47 41.47	9.90	0.65	1 54 56.7	1 24 2.8	77.2	9.8	10.4
Feb. 1	23 51 37.31	23 55 32.06	9.80	0.66	8. 0 53 8.4	8. 0 22 14.0	77.3	9.9	10.6
3	23 59 25.73	0 3 18.30	9.71	0.67	N. 0 8 39.5	N. 0 39 31.6	77.2	10.1	10.8
5	0 7 9.79	0 11 0.19	9.62	0.69	1 10 21.4	1 41 8.2	77.0	10.3	11.0
7	0 14 49.49	0 18 37.71	+9.53	0.70	N. 2 11 51.1	2 42 29.5	+76.7	10.5	11.2
9	0 22 24.83	0 26 10.85	9.44	0.71	3 13 2.8	3 43 30.2	76.3	10.7	11.4
11	0 29 55.78	0 33 39.58	9.35	0.73	4 13 51.1	4 44 4.6	75.7	10.9	11.6
13	0 37 22.26	0 41 3.79	9.25	0.75	5 14 10.1	5 44 7.0	75.0	11.2	11.9
15	0 44 44.17	0 48 23.37	9.16	0.76	6 13 54.5	6 43 31.9	74.3	11.4	12.1
17	0 52 1.38	0 55 38.18	9.06	0.78	7 12 58.6	7 42 13.9	73.4	11.6	12.4
19	0 59 13.75	1 2 48.05	+8.96	0.80	N. 8 11 17.2	8 40 7.7	+72.4	11.8	12.6
21	1 6 21.07	1 9 52.78	8.85	0.82	9 8 45.0	9 37 8.5	71.3	12.1	12.9
23	1 13 23.15	1 16 52.13	8.74	0.84	10 5 17.3	10 33 11.0	70.1	12.4	13.2
25	1 20 19.67	1 23 45.74	8.62	0.86	11 0 48.9	11 28 10.3	68.7	12.7	13.5
27	1 27 10.29	1 30 33.23	8.49	0.89	11 55 14.7	12 22 1.5	67.3	13.0	13.8
29	1 33 54.51	1 37 14.05	8.35	0.91	12 48 29.9	13 14 39.3	65.8	13.3	14.2
Mar. 2	1 40 31.77	1 43 47.59	+8.20	0.93	N. 13 40 29.1	14 5 58.5	+64.2	13.6	14.5
4	1 47 1.42	1 50 13.14	8.03	0.96	14 31 7.0	14 55 53.9	62.4	14.0	14.9
6	1 53 22.66	1 56 29.87	7.85	0.99	15 20 18.2	15 44 19.5	60.5	14.4	15.3
8	1 59 34.63	2 2 36.84	7.65	1.02	16 7 57.1	16 31 10.1	58.6	14.7	15.7
10	2 5 36.35	2 8 33.03	7.42	1.05	16 53 57.8	17 16 19.5	56.5	15.1	16.1
12	2 11 26.72	2 14 17.27	7.17	1.08	17 38 14.6	17 59 42.1	54.2	15.5	16.5
14	2 17 4.51	2 19 48.28	+6.90	1.12	N. 18 20 41.4	18 41 11.6	+51.9	16.0	17.0
16	2 22 28.42	2 25 4.74	6.59	1.16	19 1 12.2	19 20 42.1	49.4	16.4	17.5
18	2 27 37.04	2 30 5.14	6.26	1.20	19 39 40.6	19 58 6.7	46.8	16.9	18.0
20	2 32 28.84	2 34 47.94	5.89	1.24	20 15 59.8	20 33 19.0	44.0	17.4	18.5
22	2 37 2.23	2 39 11.50	5.49	1.28	20 50 3.2	21 6 11.7	41.1	17.9	19.1
24	2 41 15.52	2 43 14.02	5.05	1.32	21 21 43.5	21 36 37.3	38.0	18.5	19.7
26	2 45 6.76	2 46 53.48	+4.57	1.37	N. 21 50 52.4	22 4 27.3	+34.8	19.1	20.3
28	2 48 33.96	2 50 7.91	4.05	1.42	22 17 21.0	22 29 32.0	31.4	19.7	21.0
30	2 51 35.03	2 52 55.06	3.48	1.47	22 40 58.9	22 51 40.3	27.7	20.3	21.6
Apr. 1	2 54 7.75	2 55 12.81	+2.87	1.51	N. 23 1 34.7	23 10 40.3	+23.7	20.9	22.3

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in Hour of Long.	Sid. Time of Sem. pass Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in Hour of Long.	Semidiameter.	Hor. Par.
Apr. 3	^{h m s} 2 56 9.93	^{h m s} 2 56 58.87	+ 2.21	1.56	N. 23 18 55.3	N. 23 26 17.8	+ 19.5	21.6	23.0
5	2 57 39.38	2 58 11.23	+ 0.77	1.68	23 32 46.0	23 38 17.7	15.0	22.3	23.8
7	2 58 34.17	2 58 48.01	- 0.01	1.73	23 42 50.9	23 46 23.2	+ 4.9	23.0	24.5
9	2 58 52.55	2 58 47.65	0.80	1.79	23 48 52.6	23 50 16.7	- 0.8	23.8	25.3
11	2 58 33.21	2 58 9.16	1.60	1.84	23 50 33.3	23 49 40.2	6.8	24.5	26.1
13	2 57 35.51	2 56 52.28	- 2.39	1.88	23 47 35.1	23 44 15.8	- 13.1	25.2	26.8
15	2 55 59.59	2 54 57.63	3.14	1.93	N. 23 39 40.8	N. 23 33 48.4	19.6	25.9	27.6
17	2 53 46.64	2 52 26.94	3.83	1.97	23 26 37.2	23 18 6.4	26.3	26.6	28.3
19	2 50 58.91	2 49 23.02	4.44	2.01	23 8 15.4	22 57 4.1	32.9	27.1	28.9
21	2 47 39.79	2 45 49.82	4.95	2.03	22 44 32.8	22 30 42.7	39.4	27.7	29.5
23	2 43 53.78	2 41 52.37	5.33	2.05	22 15 35.4	21 59 13.5	45.3	28.2	30.0
25	2 39 46.37	2 37 36.63	- 5.57	2.06	21 41 40.0	21 22 58.4	- 50.6	28.5	30.4
27	2 35 24.03	2 33 9.46	1.58	2.08	N. 21 3 13.2	N. 20 42 29.6	54.8	28.8	30.7
29	{ 28 53.01 }	2 26 23.02	5.50	2.05	{ 10 28 53.1 }	19 35 29.4	59.4	29.0	30.9
May 1	2 24 9.70	2 21 58.96	5.22	2.02	19 11 55.8	18 47 57.9	60.8	29.0	30.9
3	2 19 51.62	2 17 48.48	4.80	1.99	18 23 43.6	17 59 20.9	60.7	28.5	30.4
5	2 15 50.31	2 13 57.79	4.28	1.96	17 34 57.9	17 10 42.5	59.5	28.2	30.0
7	2 12 11.57	2 10 32.17	- 3.67	1.92	16 46 42.2	16 23 4.3	- 57.1	27.7	29.5
9	2 9 0.11	2 7 35.83	3.00	1.87	N. 15 59 55.7	N. 15 37 22.9	53.6	27.2	29.0
11	2 6 19.71	2 5 12.01	2.27	1.83	15 15 31.9	14 54 28.1	49.3	26.6	28.3
13	2 4 13.00	2 3 22.85	1.52	1.78	14 34 16.3	14 15 0.5	44.4	25.9	27.6
15	2 2 41.68	2 2 9.54	0.77	1.73	13 56 44.4	13 39 30.4	39.0	25.3	26.9
17	2 1 46.44	2 1 32.33	- 0.03	1.68	13 23 20.9	13 8 18.0	33.4	24.5	26.1
19	2 1.27.15	2 1 30.76	+ 0.69	1.63	12 54 22.6	12 41 35.5	- 27.7	23.8	25.3
21	2 1 43.02	2 2 3.75	1.38	1.57	N. 12 29 56.8	N. 12 19 26.2	22.1	23.0	24.5
23	2 2 32.78	2 3 9.90	2.04	1.52	12 10 3.3	12 1 47.1	16.6	22.3	23.8
25	2 3 54.90	2 4 47.57	2.65	1.47	11 54 36.7	11 48 36.7	11.3	21.6	23.0
27	2 5 47.68	2 6 55.00	3.23	1.42	11 43 27.8	11 39 26.1	6.4	20.9	22.3
29	2 8 9.29	2 9 30.32	3.78	1.38	11 36 23.8	11 34 19.1	- 1.8	20.3	21.6
31	2 10 57.89	2 12 31.75	+ 4.28	1.33	11 33 10.0	11 32 54.6	+ 2.5	19.6	20.9
June 2	2 14 11.72	2 15 57.57	4.76	1.29	N. 11 33 30.9	N. 11 34 56.7	6.5	19.0	20.2
4	2 17 49.12	2 19 46.17	5.21	1.25	11 37 10.3	11 40 9.4	10.1	18.4	19.6
6	2 21 48.50	2 23 55.99	5.62	1.21	11 43 52.2	11 48 16.4	13.4	17.8	19.0
8	2 26 8.49	2 28 25.79	6.01	1.18	11 53 20.5	11 59 2.0	16.4	17.3	18.4
10	2 30 47.77	2 33 14.28	6.38	1.14	12 5 19.4	12 12 10.8	19.1	16.7	17.8
12	2 35 45.20	2 38 20.38	+ 6.72	1.11	12 19 34.3	12 27 28.0	+ 21.4	16.2	17.3
14	2 40 59.69	2 43 43.00	7.05	1.08	N. 12 35 50.4	N. 12 44 39.4	23.5	15.8	16.8
16	2 46 30.20	2 49 21.18	7.35	1.05	12 53 53.4	13 3 30.7	25.4	15.3	16.3
18	2 52 15.80	2 55 13.96	7.64	1.02	13 13 29.4	13 23 48.1	26.9	14.9	15.8
20	2 58 15.57	3 1 20.53	7.91	1.00	13 34 25.1	13 45 18.7	28.2	14.5	15.4
22	3 4 28.74	3 7 40.10	8.17	0.97	13 56 27.6	14 7 50.0	29.2	14.1	15.0
24	3 10 54.55	3 14 11.99	+ 8.41	0.95	14 19 24.3	14 31 9.4	+ 29.9	13.7	14.6
26	3 17 32.35	3 20 55.54	8.64	0.92	N. 14 43 3.5	N. 14 55 5.3	30.5	13.3	14.2
28	3 24 21.51	3 27 50.19	8.86	0.90	15 7 13.6	15 19 27.0	30.8	13.0	13.9
30	3 31 21.51	3 34 55.41	+ 9.07	0.88	15 31 44.2	15 44 3.9	+ 30.9	12.7	13.5
July 2	3 38 31.86	3 42 10.78			N. 15 56 24.9	N. 16 8 46.1			

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in Hour of Long.	Sid. Time of Sem. pass ^r Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in Hour of Long.	Semidiameter.	Hor. Par.
July 4	h m s	h m s	s	s	° ' "	° ' "	"	"	"
6	3 45 52.15	3 49 35.91	+ 9.27	0.86	N. 16 21 6.3	N. 16 33 24.3	+ 30.8	12.4	13.2
8	3 53 22.02	3 57 10.44	9.47	0.84	16 45 38.9	16 57 49.2	30.5	12.1	12.9
10	4 1 1.13	4 4 54.08	9.66	0.82	17 9 54.0	17 21 52.4	30.1	11.8	12.6
12	4 8 49.24	4 12 46.59	9.84	0.80	17 33 43.1	17 45 25.2	29.5	11.5	12.3
14	4 16 46.06	4 20 47.64	10.02	0.79	17 56 58.1	18 8 20.3	28.7	11.3	12.1
16	4 24 51.30	4 28 56.98	10.20	0.77	18 19 30.9	18 30 29.2	27.7	11.1	11.8
18	4 33 4.66	4 37 14.30	+ 10.36	0.76	N. 18 41 14.0	N. 18 51 44.4	+ 26.5	10.9	11.6
20	4 41 25.86	4 45 39.31	10.52	0.75	19 1 59.6	19 11 58.6	25.3	10.6	11.3
22	4 49 54.60	4 54 11.68	10.68	0.73	19 21 40.5	19 31 4.4	23.9	10.4	11.1
24	4 58 30.52	5 2 51.06	10.82	0.72	19 40 9.7	19 48 55.3	22.3	10.2	10.9
26	5 7 13.27	5 11 37.09	10.96	0.71	19 57 20.5	20 5 24.6	20.6	10.1	10.7
28	5 16 2.49	5 20 29.41	11.09	0.70	20 13 6.7	20 20 26.2	18.8	9.9	10.5
30	5 24 57.83	5 29 27.71	+ 11.21	0.69	N. 20 27 22.3	N. 20 33 54.4	+ 16.8	9.7	10.3
Aug. 1	5 33 58.98	5 38 31.59	11.33	0.68	20 40 1.6	20 45 43.5	14.8	9.5	10.1
3	5 43 5.53	5 47 40.73	11.44	0.67	20 50 59.5	20 55 48.8	12.6	9.3	9.9
5	5 52 17.15	5 56 54.76	11.54	0.66	21 0 10.9	21 4 5.5	10.4	9.2	9.8
7	6 1 33.51	6 6 13.35	11.64	0.65	21 7 31.8	21 10 29.4	8.0	9.0	9.6
9	6 10 54.25	6 15 36.16	11.73	0.64	21 12 57.9	21 14 56.6	5.6	8.9	9.5
11	6 20 19.04	6 25 2.82	+ 11.81	0.62	N. 21 16 25.3	N. 21 17 23.4	+ 3.1	8.7	9.3
13	6 29 47.49	6 34 32.99	11.88	0.61	21 17 50.9	21 17 47.1	+ 0.5	8.6	9.2
15	6 39 19.25	6 44 6.24	11.94	0.60	21 17 11.7	21 16 4.4	- 2.1	8.5	9.0
17	6 48 53.91	6 53 42.22	12.00	0.60	21 14 25.1	21 12 13.3	4.8	8.4	8.9
19	6 58 31.09	7 3 20.48	12.04	0.59	21 9 28.9	21 6 11.5	7.5	8.3	8.8
21	7 10 32	7 13 0.58	12.09	0.58	21 2 21.1	20 57 57.6	10.3	8.1	8.6
23	7 17 51.19	7 22 42.11	+ 12.12	0.57	N. 20 53 0.9	N. 20 47 30.7	- 13.1	8.0	8.5
25	7 27 33.28	7 32 24.65	12.13	0.56	20 41 27.2	20 34 50.2	15.8	7.9	8.4
27	7 37 16.17	7 42 7.78	12.14	0.55	20 27 39.9	20 19 56.1	18.6	7.8	8.3
29	7 46 59.47	7 51 51.15	12.15	0.54	20 11 38.9	20 2 48.6	21.4	7.7	8.2
31	7 56 42.80	8 1 34.36	12.15	0.54	19 52 25.1	19 43 28.5	24.1	7.6	8.1
Sept. 2	8 6 25.82	8 11 17.13	12.14	0.53	19 32 58.9	19 21 56.8	26.9	7.5	8.0
4	8 16 8.24	8 20 59.13	+ 12.12	0.52	N. 19 10 22.2	N. 18 58 15.2	- 29.7	7.4	7.9
6	8 25 49.77	8 30 40.13	12.10	0.51	18 45 36.4	18 32 25.8	32.3	7.3	7.8
8	8 35 30.17	8 40 19.88	12.08	0.51	18 18 43.7	18 4 30.5	34.9	7.2	7.7
10	8 45 9.23	8 49 58.21	12.05	0.50	17 49 46.4	17 34 31.8	37.5	7.1	7.6
12	8 54 46.78	8 59 34.93	12.02	0.49	17 18 47.0	17 2 32.3	40.0	7.0	7.5
14	9 4 22.64	9 9 9.90	11.98	0.49	16 45 43.4	16 28 35.4	42.4	7.0	7.4
16	9 13 56.68	9 18 42.98	+ 11.94	0.48	N. 16 10 53.9	N. 15 52 44.3	- 44.8	6.9	7.4
18	9 23 28.77	9 28 14.04	11.90	0.48	15 34 6.9	15 15 2.5	47.1	6.9	7.3
20	9 32 58.79	9 37 43.00	11.86	0.47	14 55 31.5	14 35 34.3	49.3	6.8	7.2
22	9 42 26.66	9 47 9.77	11.80	0.46	14 15 11.5	13 54 23.7	51.5	6.7	7.1
24	9 51 52.33	9 56 34.33	11.76	0.46	13 33 11.5	13 11 35.4	53.5	6.7	7.1
26	10 1 15.77	10 5 56.66	11.72	0.45	12 49 35.9	12 27 13.7	55.5	6.6	7.0
28	10 10 37.00	10 15 16.79	+ 11.67	0.44	N. 12 4 29.4	N. 11 41 23.4	- 57.3	6.5	6.9
30	10 19 56.05	10 24 34.77	11.62	0.44	11 17 56.6	10 54 9.6	59.1	6.5	6.9
Oct. 2	10 29 12.97	10 33 50.68	11.58	0.43	10 30 2.8	10 5 37.0	60.7	6.4	6.8
4	10 38 27.90	10 43 4.66	+ 11.54	0.43	N. 9 40 52.6	N. 9 15 50.6	- 62.2	6.3	6.7

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^g Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
Oct.	4 10 47 40.96	10 52 16.85	+11.50	0.43	N. 8 50 31.5	N. 8 24 56.0	-63.6	6.3	6.7
	6 10 56 52.33	11 1 27.43	11.47	0.42	7 59 4.6	7 32 58.0	65.0	6.2	6.6
	8 11 6 2.19	11 10 36.63	11.44	0.42	7 6 36.7	6 40 1.6	66.2	6.2	6.6
	10 11 15 10.76	11 19 44.63	11.42	0.41	6 13 13.2	5 46 12.1	67.3	6.1	6.5
	12 11 24 18.25	11 28 51.65	11.40	0.41	5 18 59.2	4 51 35.1	68.3	6.1	6.5
	14 11 33 24.87	11 37 57.93	11.39	0.40	4 24 0.4	3 56 15.9	69.1	6.0	6.4
	16 11 42 30.86	11 47 3.68	+11.38	0.40	N. 3 28 22.3	N. 3 0 20.3	-69.9	6.0	6.4
	18 11 51 36.43	11 56 9.13	11.37	0.39	2 32 10.5	2 3 53.7	70.5	5.9	6.3
	20 12 0 41.83	12 5 14.54	11.36	0.39	1 35 30.6	1 7 2.0	71.1	5.9	6.3
	22 12 9 47.31	12 14 20.15	11.37	0.39	N. 0 38 28.6	N. 0 9 50.9	71.5	5.8	6.2
Nov.	24 12 18 53.12	12 23 26.24	11.38	0.39	S. 0 18 49.9	S. 0 47 33.3	71.7	5.8	6.2
	26 12 27 59.53	12 32 33.04	11.39	0.39	1 16 18.6	1 45 5.1	71.8	5.8	6.2
	28 12 37 6.79	12 41 40.84	+11.41	0.38	S. 2 13 51.8	S. 2 42 38.2	-71.9	5.7	6.1
	30 12 46 15.19	12 50 49.90	11.44	0.38	3 11 23.4	3 40 6.7	71.8	5.7	6.1
	1 12 55 25.01	13 0 0.56	11.47	0.38	4 8 47.4	4 37 24.6	71.6	5.6	6.0
	3 13 4 36.58	13 9 13.10	11.51	0.38	5 5 57.8	5 34 26.2	71.3	5.6	6.0
	5 13 13 50.19	13 18 27.86	11.55	0.38	6 2 48.9	6 31 5.3	70.8	5.6	6.0
	7 13 23 6.15	13 27 45.10	11.61	0.37	6 59 14.6	7 27 16.0	70.2	5.5	5.9
	9 13 32 24.74	13 37 5.12	+11.67	0.37	S. 7 55 8.9	S. 8 22 52.2	-69.5	5.5	5.9
	11 13 41 46.26	13 46 28.20	11.73	0.37	8 50 25.4	9 17 47.7	68.7	5.5	5.9
Dec.	13 13 51 10.97	13 55 54.60	11.80	0.37	9 44 58.2	10 11 56.1	67.7	5.5	5.8
	15 14 0 39.12	14 5 24.55	11.87	0.37	10 38 40.6	11 5 11.2	66.5	5.4	5.8
	17 14 10 10.93	14 14 58.29	11.95	0.37	11 31 26.7	11 57 26.4	65.3	5.4	5.8
	19 14 19 46.65	14 24 36.03	12.03	0.37	12 23 9.5	12 48 35.2	63.9	5.4	5.7
	21 14 29 26.46	14 34 17.95	+12.12	0.37	S.13 13 42.8	S.13.38 31.3	-62.4	5.4	5.7
	23 14 39 10.52	14 44 4.19	12.21	0.37	14 3 0.0	14 27 8.0	60.8	5.3	5.7
	25 14 48 58.97	14 53 54.87	12.30	0.37	14 50 54.5	15 14 18.5	59.0	5.3	5.7
	27 14 58 51.92	15 3 50.13	12.40	0.37	15 37 19.7	15 59 56.8	57.0	5.3	5.6
	29 15 8 49.50	15 13 50.05	12.50	0.37	16 22 9.2	16 43 56.2	55.0	5.3	5.6
	1 15 18 51.78	15 23 54.71	12.60	0.37	17 5 16.9	17 26 10.5	52.8	5.2	5.6
Dec.	3 15 28 58.84	15 34 4.16	+12.70	0.37	S.17 46 36.3	S.18 6 33.5	-50.5	5.2	5.6
	5 15 39 10.68	15 44 18.40	12.80	0.37	18 26 1.5	18 44 59.4	48.1	5.2	5.6
	7 15 49 27.32	15 54 37.43	12.90	0.37	19 3 26.3	19 21 21.8	45.5	5.2	5.5
	9 15 59 48.72	16 5 1.15	13.00	0.37	19 38 45.1	19 55 35.3	42.8	5.2	5.5
	11 16 10 14.73	16 15 29.45	13.09	0.37	20 11 51.9	20 27 34.1	40.0	5.2	5.5
	13 16 20 45.27	16 26 2.17	13.19	0.37	20 42 41.3	20 57 12.8	37.1	5.1	5.5
	15 16 31 20.13	16 36 39.11	+13.27	0.37	S.21 11 8.1	S.21 24 26.4	-34.1	5.1	5.5
	17 16 41 59.08	16 47 20.01	13.35	0.37	21 37 7.2	21 49 9.8	30.9	5.1	5.4
	19 16 52 41.86	16 58 4.57	13.43	0.37	22 0 33.9	22 11 18.6	27.7	5.1	5.4
	21 17 3 28.11	17 8 52.44	13.50	0.37	22 21 23.6	22 30 48.3	24.4	5.1	5.4
Dec.	23 17 14 17.48	17 19 43.20	13.56	0.37	22 39 32.4	22 47 35.5	21.0	5.1	5.4
	25 17 25 9.55	17 30 36.45	13.61	0.37	22 54 57.0	23 1 36.7	17.6	5.0	5.4
	27 17 36 3.86	17 41 31.73	+13.65	0.36	S.23 7 34.1	S.23 12 49.0	-14.0	5.0	5.4
	29 17 47 0.01	17 52 28.63	13.68	0.36	23 17 21.2	23 21 10.3	10.4	5.0	5.3
	31 17 57 57.53	18 3 26.68	+13.71	0.36	S.23 24 16.2	S.23 26 38.7	-6.8	5.0	5.3

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^g Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
Dec. 4	h m s 12 55 56.36	h m s 12 58 7.10	+ 5.45	0.19	S. 4 26 4.8	0 1 0	-33.8	2.8	4.5
6	13 0 17.77	13 2 28.36	5.44	0.19	4 53 9.1	5 6 36.8	33.7	2.9	4.6
8	13 4 38.88	13 6 49.32	5.44	0.19	5 20 1.5	5 33 23.0	33.5	2.9	4.6
10	13 8 59.69	13 11 9.99	5.43	0.20	5 46 41.4	5 59 56.5	33.2	3.0	4.7
12	13 13 20.21	13 15 30.36	5.42	0.20	6 13 8.1	6 26 16.2	32.9	3.0	4.7
14	13 17 40.43	13 19 50.42	5.42	0.20	6 39 20.8	6 52 21.8	32.6	3.0	4.8
16	13 22 0.33	13 24 10.16	+ 5.41	0.20	S. 7 5 19.1	7 18 12.6	-32.3	3.0	4.8
18	13 26 19.91	13 28 29.57	5.40	0.21	7 31 2.2	7 43 47.8	32.0	3.1	4.9
20	13 30 39.13	13 32 48.59	5.40	0.21	7 56 29.3	8 9 6.8	31.6	3.1	4.9
22	13 34 57.96	13 37 7.22	5.39	0.21	8 21 39.9	8 34 8.6	31.3	3.1	5.0
24	13 39 16.36	13 41 25.40	5.38	0.21	8 46 33.0	8 58 52.8	30.9	3.1	5.0
26	13 43 34.32	13 45 43.13	5.37	0.21	9 11 8.1	9 23 18.7	30.5	3.2	5.1
28	13 47 51.83	13 50 0.39	+ 5.36	0.22	S. 9 35 24.6	9 47 25.8	-30.2	3.2	5.1
30	13 52 8.83	13 54 17.16	5.35	0.22	9 59 22.0	10 11 13.4	29.8	3.3	5.2
32	13 56 25.37		+ 5.34	0.22	S. 10 23 0.1		-29.3	3.3	5.2

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Feb. 24	18 14 30.82	18 15 11.12	+ 1.69	1.26	S. 23 4 48.2	23 4 36.9	+ 0.5	16.4	1.6
26	18 15 50.91	18 16 30.18	1.65	1.27	23 4 25.1	23 4 13.0	0.5	16.4	1.6
28	18 17 8.92	18 17 47.13	1.60	1.27	23 4 0.5	23 3 47.5	0.5	16.5	1.6
Mar. 2	18 18 24.79	18 19 1.91	1.56	1.28	23 3 34.2	23 3 20.5	0.6	16.6	1.6
4	18 19 38.47	18 20 14.47	1.51	1.29	23 3 6.6	23 2 52.3	0.6	16.7	1.6
6	18 20 49.89	18 21 24.74	1.46	1.29	23 2 37.8	23 2 23.2	0.6	16.8	1.6
8	18 21 59.01	18 22 32.69	+ 1.42	1.30	S. 23 2 8.4	23 1 53.4	+ 0.6	16.9	1.6
10	18 23 5.77	18 23 38.24	1.37	1.31	23 1 38.4	23 1 23.2	0.6	17.0	1.6
12	18 24 10.21	18 24 41.36	1.32	1.32	23 1 8.0	23 0 52.7	0.6	17.1	1.6
14	18 25 11.99	18 25 42.00	1.26	1.32	23 0 37.5	23 0 22.2	0.6	17.2	1.6
16	18 26 11.38	18 26 40.12	1.21	1.33	23 0 7.0	22 59 51.9	0.6	17.3	1.7
18	18 27 8.21	18 27 35.65	1.16	1.34	22 59 36.9	22 59 22.0	0.6	17.4	1.7
20	18 28 2.42	18 28 28.53	+ 1.10	1.35	S. 22 59 7.3	22 58 52.8	+ 0.6	17.5	1.7
22	18 28 53.97	18 29 18.72	1.05	1.35	22 58 38.5	22 58 24.4	0.6	17.6	1.7
24	18 29 42.78	18 30 6.15	0.99	1.36	22 58 10.6	22 57 57.1	0.6	17.7	1.7
26	18 30 22.82	18 30 50.77	0.93	1.37	22 57 43.9	22 57 31.1	0.6	17.8	1.7
28	18 31 12.01	18 31 32.52	0.87	1.38	22 57 18.7	22 57 6.6	0.5	18.0	1.7
30	18 31 52.30	18 32 11.34	0.81	1.39	22 56 54.9	22 56 43.6	0.5	18.1	1.7
Apr. 1	18 32 29.65	18 32 47.20	+ 0.75	1.40	S. 22 56 32.8	22 56 22.5	+ 0.5	18.2	1.7
3	18 33 4.01	18 33 20.06	0.68	1.40	22 56 12.8	22 56 3.6	0.4	18.3	1.8
5	18 33 35.35	18 33 49.87	0.62	1.41	22 55 54.8	22 55 46.6	0.4	18.4	1.8
7	18 34 3.62	18 34 16.60	0.56	1.42	22 55 39.0	22 55 32.0	0.3	18.5	1.8
9	18 34 28.81	18 34 40.25	0.49	1.43	22 55 25.6	22 55 19.8	0.3	18.7	1.8
11	18 34 50.90	18 35 0.77	0.43	1.44	22 55 14.6	22 55 10.1	0.2	18.8	1.8
13	18 35 9.85	18 35 18.14	+ 0.36	1.45	S. 22 55 6.2	22 55 3.1	+ 0.2	18.9	1.8
15	18 35 25.64	18 35 32.35	0.30	1.46	22 55 0.6	22 54 58.8	+ 0.1	19.0	1.8
17	18 35 38.26	18 35 43.36	0.23	1.47	22 54 57.7	22 54 57.4	0.0	19.1	1.8
19	18 35 47.66	18 35 51.15	0.16	1.48	22 54 57.8	22 54 58.9	0.0	19.2	1.8
21	18 35 53.83	18 35 55.70	+ 0.09	1.49	S. 22 55 0.7	22 55 3.3	- 0.1	19.3	1.9

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
Apr. 23	h m s 18 35 56.75	h m s 18 35 56.98	+ 0.03	1.50	S. 22 55 6.7	S. 22 55 10.8	- 0.1	19.4	1.9
25	18 35 56.39	18 35 56.98	- 0.04	1.51	22 55 15.8	22 55 21.4	0.2	19.6	1.9
27	18 35 52.77	18 35 54.99	0.11	1.52	22 55 27.9	22 55 35.0	0.2	19.7	1.9
29	18 35 45.90	18 35 41.24	0.18	1.53	22 55 42.9	22 55 51.5	0.3	19.8	1.9
May 1	18 35 35.76	18 35 29.48	0.24	1.54	22 56 0.9	22 56 11.1	0.4	19.9	1.9
3	18 35 22.39	18 35 14.51	0.31	1.55	22 56 21.9	22 56 33.4	0.5	20.1	1.9
5	18 35 5.83	18 34 56.36	- 0.38	1.56	S. 22 56 45.7	S. 22 56 58.7	- 0.5	20.2	1.9
7	18 34 46.11	18 34 35.08	0.44	1.56	22 57 12.3	22 57 26.7	0.6	20.3	1.9
9	18 34 23.28	18 34 10.71	0.51	1.57	22 57 41.6	22 57 57.2	0.6	20.4	2.0
11	18 33 57.38	18 33 43.30	0.57	1.58	22 58 13.5	22 58 30.3	0.7	20.5	2.0
13	18 33 28.48	18 33 12.92	0.63	1.59	22 58 47.8	22 59 5.8	0.7	20.6	2.0
15	18 32 56.63	18 32 39.61	0.69	1.59	22 59 24.3	22 59 43.3	0.8	20.7	2.0
17	18 32 21.89	18 32 3.46	- 0.75	1.60	S. 23 0 2.8	S. 23 0 22.8	- 0.8	20.8	2.0
19	18 31 44.33	18 31 24.51	0.81	1.61	23 0 43.3	23 1 4.2	0.9	20.9	2.0
21	18 31 4.02	18 30 42.86	0.87	1.62	23 1 25.6	23 1 47.4	0.9	21.0	2.0
23	18 30 21.05	18 29 58.60	0.92	1.62	23 2 9.6	23 2 32.2	0.9	21.1	2.0
25	18 29 35.51	18 29 11.81	0.97	1.63	23 2 55.0	23 3 18.2	1.0	21.2	2.0
27	18 28 47.51	18 28 22.63	1.02	1.64	23 3 41.5	23 4 5.2	1.0	21.3	2.0
29	18 27 57.19	18 27 31.19	- 1.07	1.64	S. 23 4 29.0	S. 23 4 53.0	- 1.0	21.3	2.0
June 31	18 27 4.65	18 26 37.60	1.12	1.65	23 5 17.1	23 5 41.4	1.0	21.4	2.1
2	18 26 10.06	18 25 42.04	1.16	1.65	23 6 5.7	23 6 30.2	1.0	21.5	2.1
4	18 25 13.55	18 24 44.63	1.20	1.66	23 6 54.6	23 7 19.0	1.0	21.6	2.1
6	18 24 15.30	18 23 45.56	1.23	1.67	23 7 43.4	23 8 7.8	1.0	21.6	2.1
8	18 23 15.44	18 22 44.97	1.26	1.68	23 8 32.1	23 8 56.3	1.0	21.7	2.1
10	18 22 14.16	18 21 43.03	- 1.29	1.68	S. 23 9 20.4	S. 23 9 44.4	- 1.0	21.7	2.1
12	18 21 11.60	18 20 39.89	1.32	1.69	23 10 8.2	23 10 31.8	1.0	21.8	2.1
14	18 20 7.93	18 19 35.72	1.34	1.69	23 10 55.2	23 11 18.3	1.0	21.8	2.1
16	18 19 3.30	18 18 30.69	1.36	1.69	23 11 41.2	23 12 3.9	1.0	21.8	2.1
18	18 17 57.91	18 17 24.98	1.37	1.69	23 12 26.2	23 12 48.2	0.9	21.8	2.1
20	18 16 51.91	18 16 18.74	1.38	1.69	23 13 9.8	23 13 31.2	0.9	21.9	2.1
22	18 15 45.48	18 15 12.17	- 1.39	1.69	S. 23 13 52.1	S. 23 14 12.7	- 0.9	21.9	2.1
24	18 14 38.84	18 14 5.49	1.39	1.69	23 14 32.9	23 14 52.6	0.8	21.9	2.1
26	18 13 32.16	18 12 58.87	1.39	1.69	23 15 12.0	23 15 31.0	0.8	21.9	2.1
28	18 12 25.65	18 11 52.51	1.38	1.69	23 15 49.5	23 16 7.6	0.8	21.9	2.1
30	18 11 19.50	18 10 46.62	1.37	1.69	23 16 25.3	23 16 42.5	0.7	21.9	2.1
July 2	18 10 13.90	18 9 41.38	1.36	1.69	23 16 59.3	23 17 15.8	0.7	21.9	2.1
4	18 9 9.06	18 8 36.97	- 1.34	1.69	S. 23 17 31.7	S. 23 17 47.3	- 0.7	21.8	2.1
6	18 8 5.14	18 7 33.58	1.32	1.69	23 18 2.4	23 18 17.0	0.6	21.8	2.1
8	18 7 2.33	18 6 31.39	1.30	1.68	23 18 31.2	23 18 45.0	0.6	21.8	2.1
10	18 6 0.79	18 5 30.56	1.27	1.68	23 18 58.4	23 19 11.3	0.5	21.7	2.1
12	18 5 0.69	18 4 31.22	1.24	1.68	23 19 23.9	23 19 36.1	0.5	21.7	2.1
14	18 4 2.17	18 3 33.55	1.20	1.67	23 19 47.9	23 19 59.4	0.5	21.6	2.1
16	18 3 5.38	18 2 37.67	- 1.16	1.67	S. 23 20 10.5	S. 23 20 21.2	- 0.5	21.6	2.1
18	18 2 10.46	18 1 43.75	1.12	1.66	23 20 31.6	23 20 41.7	0.4	21.5	2.1
20	18 1 17.57	18 0 51.92	1.08	1.65	23 20 51.5	23 21 1.0	0.4	21.5	2.1
22	18 0 26.83	18 0 2.31	- 1.03	1.64	S. 23 21 10.3	S. 23 21 19.3	- 0.4	21.4	2.1

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^d Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
July 24	h m s	h m s	- s	s	° ' "	° ' "	- "	"	"
26	17 59 38.39	17 59 15.07	0.98	1.64	8.23 21 28.0	8.23 21 36.5	0.4	21.3	2.1
28	17 58 52.37	17 58 30.31	0.93	1.63	23 21 44.8	23 21 52.9	0.3	21.2	2.0
30	17 58 8.89	17 57 48.15	0.88	1.63	23 22 0.8	23 22 8.6	0.3	21.1	2.0
Aug. 1	17 57 28.08	17 57 8.70	0.82	1.62	23 22 16.1	23 22 23.6	0.3	21.0	2.0
3	17 56 50.02	17 56 32.05	0.76	1.62	23 22 30.9	23 22 38.1	0.3	21.0	2.0
5	17 56 14.81	17 55 58.29	0.70	1.61	23 22 45.3	23 22 52.3	0.3	20.9	2.0
7	17 55 42.52	17 55 27.49	- 0.64	1.60	8.23 22 59.3	8.23 23 6.3	- 0.3	20.8	2.0
9	17 55 13.21	17 54 59.70	0.58	1.59	23 23 13.2	23 23 20.1	0.3	20.7	2.0
11	17 54 46.95	17 54 34.97	0.52	1.59	23 23 27.1	23 23 33.9	0.3	20.6	2.0
13	17 54 23.76	17 54 13.34	0.45	1.58	23 23 40.8	23 23 47.8	0.3	20.4	2.0
15	17 54 3.70	17 53 54.85	0.38	1.57	23 23 54.7	23 24 1.7	0.3	20.3	2.0
17	17 53 46.80	17 53 39.55	0.32	1.56	23 24 8.8	23 24 15.9	0.3	20.2	1.9
19	17 53 33.10	17 53 27.46	- 0.25	1.55	8.23 24 23.0	8.23 24 30.3	- 0.3	20.1	1.9
21	17 53 22.63	17 53 18.61	0.18	1.54	23 24 37.5	23 24 44.9	0.3	20.0	1.9
23	17 53 15.41	17 53 13.02	0.12	1.54	23 24 52.4	23 25 0.0	0.3	19.9	1.9
25	17 53 11.45	17 53 10.71	- 0.05	1.53	23 25 7.6	23 25 15.4	0.3	19.8	1.9
27	17 53 10.80	17 53 11.71	+ 0.02	1.52	23 25 23.3	23 25 31.2	0.3	19.7	1.9
29	17 53 13.44	17 53 16.00	0.09	1.51	23 25 39.2	23 25 47.3	0.3	19.6	1.9
Sept. 2	17 53 19.38	17 53 23.58	+ 0.16	1.50	8.23 25 55.5	8.23 26 3.7	- 0.3	19.4	1.9
4	17 53 28.61	17 53 34.45	0.23	1.49	23 26 12.0	23 26 20.4	0.3	19.3	1.9
6	17 53 41.11	17 53 48.58	0.29	1.49	23 26 28.9	23 26 37.4	0.4	19.2	1.8
8	17 53 56.86	17 54 5.95	0.36	1.48	23 26 46.0	23 26 54.6	0.4	19.1	1.8
10	17 54 15.83	17 54 26.50	0.43	1.47	23 27 3.3	23 27 12.0	0.4	19.0	1.8
12	17 54 37.97	17 54 50.22	0.49	1.46	23 27 20.7	23 27 29.4	0.4	18.9	1.8
14	17 55 3.26	17 55 17.07	+ 0.56	1.45	8.23 27 38.1	8.23 27 46.8	- 0.4	18.7	1.8
16	17 55 31.65	17 55 47.01	0.62	1.44	23 27 55.4	23 28 3.9	0.4	18.6	1.8
18	17 56 3.13	17 56 20.01	0.69	1.42	23 28 12.4	23 28 20.8	0.4	18.5	1.8
20	17 56 37.65	17 56 56.04	0.75	1.41	23 28 29.1	23 28 37.3	0.3	18.4	1.8
22	17 57 15.18	17 57 35.07	0.81	1.40	23 28 45.4	23 28 53.4	0.3	18.3	1.8
24	17 57 55.69	17 58 17.05	0.87	1.40	23 29 1.2	23 29 8.8	0.3	18.2	1.7
26	17 58 39.14	17 59 1.95	+ 0.93	1.39	8.23 29 16.3	8.23 29 23.4	- 0.3	18.1	1.7
28	17 59 25.48	17 59 49.72	0.99	1.38	23 29 30.4	23 29 37.1	0.3	18.0	1.7
30	18 0 14.67	18 0 40.32	1.05	1.38	23 29 43.5	23 29 49.6	0.3	17.9	1.7
Oct. 2	18 1 6.66	18 1 33.69	1.11	1.37	23 29 55.4	23 30 0.8	0.2	17.8	1.7
4	18 1 1.39	18 2 29.76	1.17	1.36	23 30 5.9	23 30 10.6	0.2	17.7	1.7
6	18 2 58.80	18 3 28.49	1.22	1.35	23 30 14.9	23 30 18.8	0.2	17.6	1.7
8	18 3 58.82	18 4 29.80	+ 1.28	1.35	8.23 30 22.2	8.23 30 25.2	- 0.1	17.5	1.7
10	18 5 1.40	18 5 33.63	1.33	1.34	23 30 27.7	23 30 29.6	0.1	17.4	1.7
12	18 6 6.47	18 6 39.93	1.38	1.34	23 30 31.1	23 30 32.0	- 0.1	17.3	1.7
14	18 7 13.99	18 7 48.65	1.43	1.33	23 30 32.3	23 30 32.0	0.0	17.2	1.7
16	18 8 23.90	18 8 59.73	1.48	1.32	23 30 31.0	23 30 29.5	+ 0.1	17.1	1.6
18	18 9 36.14	18 10 13.12	1.53	1.31	23 30 27.2	23 30 24.2	0.1	17.0	1.6
20	18 10 50.67	18 11 28.77	+ 1.58	1.30	8.23 30 20.6	8.23 30 16.1	+ 0.2	16.9	1.6
22	18 12 7.42	18 12 46.62	1.62	1.30	23 30 10.9	23 30 5.0	0.2	16.8	1.6
24	18 13 26.36	18 14 6.63	1.67	1.29	23 29 58.2	23 29 50.6	0.3	16.7	1.6
26	18 14 47.43	18 15 28.75	+ 1.71	1.29	8.23 29 42.1	8.23 29 32.7	+ 0.4	16.6	1.6

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
Jan. 1	h m s 9 28 43.88	h m s 9 28 30.80	- 0.54	0.69	N. 16 1 2.9	N. 16 2 16.3	+ 3.0	8.9	1.1
3	9 28 17.39	9 28 3.65	0.57	0.69	16 3 31.1	16 4 47.3	3.1	8.9	1.1
5	9 27 49.60	9 27 35.24	0.59	0.70	16 6 4.8	16 7 23.6	3.2	9.0	1.1
7	9 27 20.58	9 27 5.62	0.62	0.70	16 8 43.7	16 10 5.0	3.3	9.0	1.1
9	9 26 50.39	9 26 34.87	0.64	0.70	16 11 27.3	16 12 50.8	3.4	9.0	1.1
11	9 26 19.09	9 26 3.05	0.66	0.70	16 14 15.4	16 15 41.0	3.5	9.0	1.1
13	9 25 46.76	9 25 30.23	- 0.68	0.70	N. 16 17 7.5	N. 16 18 35.0	+ 3.6	9.0	1.1
15	9 25 13.47	9 24 56.50	0.70	0.70	16 20 3.3	16 21 32.4	3.7	9.0	1.1
17	9 24 39.31	9 24 21.91	0.72	0.70	16 23 2.2	16 24 32.9	3.8	9.1	1.1
19	9 24 4.31	9 23 46.53	0.74	0.70	16 26 4.2	16 27 36.1	3.8	9.1	1.1
21	9 23 28.58	9 23 10.47	0.75	0.71	16 29 8.5	16 30 41.5	3.9	9.1	1.1
23	9 22 52.19	9 22 33.76	0.76	0.71	16 32 15.0	16 33 48.9	3.9	9.1	1.1
25	9 22 15.20	9 21 56.51	- 0.78	0.71	N. 16 35 23.1	N. 16 36 57.6	+ 3.9	9.1	1.1
27	9 21 37.72	9 21 18.81	0.79	0.71	16 38 32.4	16 40 7.4	4.0	9.1	1.1
29	9 20 59.82	9 20 40.74	0.79	0.71	16 41 42.5	16 43 17.7	4.0	9.1	1.1
31	9 20 21.59	9 20 2.39	0.80	0.71	16 44 53.0	16 46 28.2	4.0	9.1	1.1
Feb. 2	9 19 43.13	9 19 23.83	0.80	0.71	16 48 3.2	16 49 38.2	4.0	9.1	1.1
4	9 19 4.51	9 18 45.18	0.81	0.71	16 51 13.1	16 52 47.7	4.0	9.1	1.1
6	9 18 25.85	9 18 6.52	- 0.81	0.71	N. 16 54 22.1	N. 16 55 56.0	+ 3.9	9.1	1.1
8	9 17 47.22	9 17 27.96	0.80	0.71	16 57 29.6	16 59 2.8	3.9	9.1	1.1
10	9 17 8.73	9 16 49.57	0.80	0.71	17 0 35.5	17 2 7.5	3.8	9.1	1.1
12	9 16 30.47	9 16 11.44	0.79	0.71	17 3 38.9	17 5 9.8	3.8	9.1	1.1
14	9 15 52.51	9 15 33.67	0.79	0.71	17 6 40.0	17 8 9.3	3.7	9.1	1.1
16	9 15 14.94	9 14 56.33	0.78	0.71	17 9 38.0	17 11 5.8	3.6	9.1	1.1
18	9 14 37.84	9 14 19.48	- 0.77	0.71	N. 17 12 32.8	N. 17 13 58.9	+ 3.6	9.1	1.1
20	9 14 1.27	9 13 43.22	0.76	0.71	17 15 24.1	17 16 48.3	3.5	9.1	1.1
22	9 13 25.33	9 13 7.63	0.74	0.71	17 18 11.4	17 19 33.5	3.4	9.1	1.1
24	9 12 50.10	9 12 32.76	0.73	0.71	17 20 54.6	17 22 14.4	3.4	9.1	1.1
26	9 12 15.64	9 11 58.74	0.71	0.71	17 23 33.1	17 24 50.6	3.3	9.0	1.1
28	9 11 42.06	9 11 25.62	0.69	0.70	17 26 6.8	17 27 21.6	3.1	9.0	1.1
Mar. 2	9 11 9.43	9 10 53.49	- 0.67	0.70	N. 17 28 35.2	N. 17 29 47.4	+ 3.0	9.0	1.1
4	9 10 37.81	9 10 22.42	0.65	0.70	17 30 58.2	17 32 7.4	2.9	9.0	1.1
6	9 10 7.29	9 9 52.46	0.62	0.70	17 33 15.3	17 34 21.7	2.8	9.0	1.1
8	9 9 37.93	9 9 23.70	0.60	0.70	17 35 26.6	17 36 29.9	2.7	9.0	1.1
10	9 9 9.78	9 8 56.17	0.57	0.70	17 37 31.7	17 38 31.8	2.5	8.9	1.1
12	9 8 42.89	9 8 29.94	0.55	0.70	17 39 30.3	17 40 27.2	2.4	8.9	1.1
14	9 8 17.33	9 8 5.06	- 0.52	0.69	N. 17 41 22.5	N. 17 42 16.1	+ 2.3	8.9	1.1
16	9 7 53.15	9 7 41.58	0.49	0.69	17 43 8.0	17 43 58.2	2.1	8.9	1.1
18	9 7 30.37	9 7 19.53	0.46	0.69	17 44 46.6	17 45 33.4	2.0	8.8	1.1
20	9 7 9.05	9 6 58.94	0.43	0.69	17 46 18.5	17 47 1.8	1.8	8.8	1.0
22	9 6 49.21	9 6 39.87	0.40	0.69	17 47 43.3	17 48 23.0	1.7	8.8	1.0
24	9 6 30.92	9 6 22.36	0.36	0.69	17 49 1.0	17 49 37.1	1.5	8.8	1.0
26	9 6 14.19	9 6 6.43	- 0.33	0.68	N. 17 50 11.3	N. 17 50 43.7	+ 1.4	8.7	1.0
28	9 5 59.07	9 5 52.13	0.30	0.68	17 51 14.2	17 51 42.9	1.2	8.7	1.0
30	9 5 45.60	9 5 39.47	0.26	0.68	17 52 9.8	17 52 34.7	1.1	8.7	1.0
Apr. 1	9 5 33.76	9 5 28.49	- 0.23	0.68	N. 17 52 57.7	N. 17 53 18.7	+ 0.9	8.7	1.0

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^g Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
Apr. 3	h m s	h m s	s	s	° ' "	° ' "	"	"	"
	9 5 23.64	9 5 19.21	- 0.19	0.68	N. 17 53 37.9	N. 17 53 55.2	+ 0.8	8.6	1.0
5	9 5 15.21	9 5 11.63	0.16	0.67	17 54 10.6	17 54 24.1	0.6	8.6	1.0
7	9 5 8.49	9 5 5.78	0.12	0.67	17 54 35.7	17 54 45.4	0.4	8.6	1.0
9	9 5 3.50	9 5 1.66	0.09	0.67	17 54 53.2	17 54 59.0	0.3	8.5	1.0
11	9 5 0.24	9 4 59.25	0.05	0.67	17 55 2.9	17 55 4.9	+ 0.1	8.5	1.0
13	9 4 58.70	9 4 58.58	- 0.01	0.66	17 55 5.1	17 55 3.4	0.0	8.5	1.0
15	9 4 58.89	9 4 59.64	+ 0.02	0.66	N. 17 54 59.8	N. 17 54 54.3	- 0.2	8.4	1.0
17	9 5 0.81	9 5 2.41	0.06	0.66	17 54 46.9	17 54 37.7	0.3	8.4	1.0
19	9 5 4.45	9 5 6.91	0.09	0.66	17 54 26.6	17 54 13.6	0.5	8.4	1.0
21	9 5 9.80	9 5 13.12	0.13	0.66	17 53 58.8	17 53 42.1	0.7	8.4	1.0
23	9 5 16.86	9 5 21.03	0.17	0.65	17 53 23.6	17 53 3.3	0.8	8.3	1.0
25	9 5 25.63	9 5 30.65	0.20	0.65	17 52 41.0	17 52 16.9	1.0	8.3	1.0
27	9 5 36.10	9 5 41.97	+ 0.24	0.65	N. 17 51 51.0	N. 17 51 23.1	- 1.1	8.3	1.0
29	9 5 48.26	9 5 54.97	0.27	0.65	17 50 53.5	17 50 22.1	1.3	8.2	1.0
May 1	9 6 2.09	9 6 9.63	0.31	0.64	17 49 48.9	17 49 13.8	1.4	8.2	1.0
3	9 6 17.58	9 6 25.95	0.34	0.64	17 48 37.0	17 47 58.4	1.6	8.2	1.0
5	9 6 34.72	9 6 43.89	0.37	0.64	17 47 18.0	17 46 35.8	1.7	8.1	1.0
7	9 6 53.46	9 7 3.43	0.41	0.64	17 45 51.9	17 45 6.3	1.9	8.1	1.0
9	9 7 13.79	9 7 24.53	+ 0.44	0.63	N. 17 44 19.0	N. 17 43 29.9	- 2.0	8.1	1.0
11	9 7 35.67	9 7 47.19	0.47	0.63	17 42 39.2	17 41 46.8	2.1	8.1	1.0
13	9 7 59.09	9 8 11.37	0.50	0.63	17 40 52.7	17 39 56.9	2.3	8.0	1.0
15	9 8 24.01	9 8 37.02	0.53	0.63	17 38 59.6	17 38 0.6	2.4	8.0	1.0
17	9 8 50.40	9 9 4.15	0.57	0.62	17 36 59.8	17 35 57.5	2.6	8.0	0.9
19	9 9 18.27	9 9 32.74	0.60	0.62	17 34 53.6	17 33 48.1	2.7	7.9	0.9
21	9 9 47.57	9 10 2.74	+ 0.63	0.62	N. 17 32 40.9	N. 17 31 32.2	- 2.8	7.9	0.9
23	9 10 18.26	9 10 34.12	0.65	0.62	17 30 22.0	17 29 10.1	3.0	7.9	0.9
25	9 10 50.32	9 11 6.85	0.68	0.61	17 27 56.8	17 26 42.0	3.1	7.9	0.9
27	9 11 23.71	9 11 40.90	0.71	0.61	17 25 25.6	17 24 7.7	3.2	7.8	0.9
29	9 11 58.41	9 12 16.25	0.74	0.61	17 22 48.3	17 21 27.4	3.3	7.8	0.9
31	9 12 34.41	9 12 52.89	0.76	0.61	17 20 5.0	17 18 41.1	3.5	7.8	0.9
June 2	9 13 11.68	9 13 30.77	+ 0.79	0.61	N. 17 17 15.9	N. 17 15 49.2	- 3.6	7.8	0.9
4	9 13 50.16	9 14 9.84	0.81	0.60	17 14 21.1	17 12 51.6	3.7	7.7	0.9
6	9 14 29.81	9 14 50.07	0.84	0.60	17 11 20.7	17 9 48.4	3.8	7.7	0.9
8	9 15 10.60	9 15 31.42	+ 0.86	0.60	N. 17 8 14.9	N. 17 6 40.0	- 3.9	7.7	0.9
Oct. 24	10 16 47.89	10 17 7.02	+ 0.80	0.59	N. 12 6 6.7	N. 12 4 31.4	- 4.0	7.7	0.9
26	10 17 25.85	10 17 44.37	0.78	0.59	12 2 57.8	12 1 25.9	3.9	7.7	0.9
28	10 18 2.58	10 18 20.48	0.75	0.59	11 59 55.8	11 58 27.5	3.7	7.8	0.9
30	10 18 38.06	10 18 55.31	0.73	0.59	11 57 1.1	11 55 36.5	3.6	7.8	0.9
Nov. 1	10 19 12.24	10 19 28.85	0.70	0.59	11 54 13.7	11 52 52.8	3.4	7.8	0.9
3	10 19 45.13	10 20 1.07	+ 0.67	0.60	N. 11 51 33.8	N. 11 50 16.7	- 3.3	7.8	0.9
5	10 20 16.67	10 20 31.94	0.64	0.60	11 49 1.6	11 47 48.4	3.1	7.9	0.9
7	10 20 46.86	10 21 1.43	0.61	0.60	11 46 37.2	11 45 28.0	2.9	7.9	0.9
9	10 21 15.66	10 21 29.53	+ 0.59	0.60	N. 11 44 20.9	N. 11 43 15.8	- 2.8	7.9	0.9

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^s Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
	h m s	h m s	s	s	° ' "	° ' "	"	"	"
Nov. 11	10 21 43.04	10 21 56.19	+ 0.56	0.60	N. 11 42 12.9	N. 11 41 12.0	- 2.6	7.9	0.9
13	10 22 8.97	10 22 21.39	0.53	0.61	11 40 13.2	11 39 16.6	2.4	8.0	0.9
15	10 22 33.44	10 22 45.11	0.49	0.61	11 38 22.1	11 37 29.9	2.2	8.0	0.9
17	10 22 56.40	10 23 7.30	0.46	0.61	11 36 39.8	11 35 52.0	2.0	8.0	0.9
19	10 23 17.82	10 23 27.95	0.43	0.61	11 35 6.4	11 34 23.1	1.9	8.0	1.0
21	10 23 37.69	10 23 47.03	0.40	0.62	11 33 42.0	11 33 3.3	1.7	8.1	1.0
23	10 23 55.98	10 24 4.53	+ 0.36	0.62	N. 11 32 26.9	N. 11 31 52.8	- 1.5	8.1	1.0
25	10 24 12.67	10 24 20.41	0.33	0.62	11 31 21.1	11 30 51.7	1.3	8.1	1.0
27	10 24 27.74	10 24 34.67	0.30	0.62	11 30 24.7	11 30 0.1	1.1	8.2	1.0
29	10 24 41.18	10 24 47.28	0.26	0.62	11 29 37.9	11 29 18.1	0.9	8.2	1.0
Dec. 1	10 24 52.97	10 24 58.25	0.23	0.62	11 29 0.6	11 28 45.6	0.7	8.2	1.0
3	10 25 3.12	10 25 7.57	0.19	0.63	11 28 33.0	11 28 22.7	0.5	8.3	1.0
5	10 25 11.60	10 25 15.22	+ 0.16	0.63	N. 11 28 15.0	N. 11 28 9.7	- 0.3	8.3	1.0
7	10 25 18.42	10 25 21.20	0.12	0.63	11 28 6.7	11 28 6.1	- 0.1	8.3	1.0
9	10 25 23.56	10 25 25.49	0.09	0.63	11 28 8.0	11 28 12.3	+ 0.1	8.3	1.0
11	10 25 27.00	10 25 28.09	0.05	0.64	11 28 19.0	11 28 28.2	0.3	8.4	1.0
13	10 25 28.77	10 25 29.02	+ 0.02	0.64	11 28 39.9	11 28 54.0	0.5	8.4	1.0
15	10 25 28.84	10 25 28.23	- 0.02	0.64	11 29 10.5	11 29 29.4	0.7	8.4	1.0
17	10 25 27.21	10 25 25.76	- 0.05	0.64	N. 11 29 50.7	N. 11 30 14.4	+ 0.9	8.5	1.0
19	10 25 23.88	10 25 21.58	0.09	0.65	11 30 40.6	11 31 9.2	1.1	8.5	1.0
21	10 25 18.86	10 25 15.72	0.12	0.65	11 31 40.1	11 32 13.5	1.3	8.5	1.0
23	10 25 12.16	10 25 8.18	0.16	0.65	11 32 49.2	11 33 27.2	1.5	8.5	1.0
25	10 25 3.80	10 24 59.01	0.19	0.65	11 34 7.6	11 34 50.2	1.7	8.6	1.0
27	10 24 53.80	10 24 48.19	0.23	0.65	11 35 35.1	11 36 22.3	1.9	8.6	1.0
29	10 24 42.18	10 24 35.77	- 0.26	0.66	N. 11 37 11.6	N. 11 38 3.2	+ 2.1	8.6	1.0
31	10 24 28.97	10 24 21.77	- 0.29	0.66	N. 11 38 57.0	N. 11 39 52.9	+ 2.3	8.7	1.0

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass ^s Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
	h m s	h m s	s	s	° ' "	° ' "	"	"	"
Feb. 24	13 20 45.53	13 20 39.65	- 0.24	0.13	S. 7 48 48.6	S. 7 48 12.1	+ 1.5	1.9	0.5
26	13 20 33.61	13 20 27.42	0.25	0.13	7 47 34.7	7 46 56.4	1.6	1.9	0.5
28	13 20 21.07	13 20 14.57	0.27	0.13	7 46 17.2	7 45 37.0	1.7	1.9	0.5
Mar. 2	13 20 7.92	13 20 1.12	0.28	0.13	7 44 56.0	7 44 14.1	1.7	1.9	0.5
4	13 19 54.18	13 19 47.10	0.29	0.13	7 43 31.4	7 42 47.9	1.8	1.9	0.5
6	13 19 39.89	13 19 32.54	0.30	0.13	7 42 3.6	7 41 18.5	1.9	1.9	0.5
8	13 19 25.06	13 19 17.46	- 0.31	0.13	S. 7 40 32.7	S. 7 39 46.1	+ 1.9	1.9	0.5
10	13 19 9.74	13 19 1.89	0.32	0.13	7 38 58.9	7 38 10.9	2.0	1.9	0.5
12	13 18 53.93	13 18 45.87	0.33	0.13	7 37 22.3	7 36 33.0	2.0	1.9	0.5
14	13 18 37.69	13 18 29.40	0.34	0.13	7 35 43.1	7 34 52.6	2.1	1.9	0.5
16	13 18 21.03	13 18 12.55	0.35	0.13	7 34 1.5	7 33 9.9	2.1	1.9	0.5
18	13 18 3.98	13 17 55.32	0.36	0.13	7 32 17.8	7 31 25.1	2.2	2.0	0.5
20	13 17 46.58	13 17 37.75	- 0.37	0.13	S. 7 30 31.9	S. 7 29 38.3	+ 2.2	2.0	0.5
22	13 17 28.84	13 17 19.86	0.37	0.13	7 28 44.2	7 27 49.8	2.3	2.0	0.5
24	13 17 10.81	13 17 1.69	0.38	0.13	7 26 54.9	7 25 59.6	2.3	2.0	0.5
26	13 16 52.50	13 16 43.26	0.38	0.13	7 25 3.9	7 24 8.0	2.3	2.0	0.5
28	13 16 33.96	13 16 24.62	0.39	0.13	7 23 11.7	7 22 15.2	2.4	2.0	0.5
30	13 16 15.23	13 16 5.80	0.39	0.13	7 21 18.4	7 20 21.4	2.4	2.0	0.5
Apr. 1	13 15 56.33	13 15 46.83	- 0.40	0.13	S. 7 19 24.3	S. 7 18 26.9	+ 2.4	2.0	0.5
3	13 15 37.30	13 15 27.74	0.40	0.13	7 17 29.3	7 16 31.7	2.4	2.0	0.5
5	13 15 18.17	13 15 8.58	0.40	0.13	7 15 33.9	7 14 36.1	2.4	2.0	0.5
7	13 14 58.98	13 14 49.38	0.40	0.13	7 13 38.3	7 12 40.4	2.4	2.0	0.5
9	13 14 39.77	13 14 30.16	0.40	0.13	7 11 42.6	7 10 44.8	2.4	2.0	0.5
11	13 14 20.55	13 14 10.96	0.40	0.13	7 9 47.0	7 8 49.4	2.4	2.0	0.5
13	13 14 1.38	13 13 51.82	- 0.40	0.13	S. 7 7 51.8	S. 7 6 54.4	+ 2.4	2.0	0.5
15	13 13 42.28	13 13 32.76	0.40	0.13	7 5 57.1	7 5 0.0	2.4	2.0	0.5
17	13 13 23.27	13 13 13.82	0.39	0.13	7 4 3.1	7 3 6.5	2.4	2.0	0.5
19	13 13 4.41	13 12 55.03	0.39	0.13	7 2 10.1	7 1 13.9	2.4	2.0	0.5
21	13 12 45.70	13 12 36.42	0.39	0.13	7 0 18.1	6 59 22.6	2.3	2.0	0.5
23	13 12 27.20	13 12 18.02	0.38	0.13	6 58 27.4	6 57 32.6	2.3	2.0	0.5
25	13 12 8.91	13 11 59.86	- 0.38	0.13	S. 6 56 38.2	S. 6 55 44.2	+ 2.3	2.0	0.5
27	13 11 50.89	13 11 41.98	0.37	0.13	6 54 50.6	6 53 57.6	2.2	2.0	0.5
29	13 11 33.15	13 11 24.40	0.37	0.13	6 53 5.0	6 52 12.9	2.2	2.0	0.5
May 1	13 11 15.74	13 11 7.16	0.36	0.13	6 51 21.4	6 50 30.4	2.1	2.0	0.5
3	13 10 58.68	13 10 50.29	0.35	0.13	6 49 40.0	6 48 50.3	2.1	2.0	0.5
5	13 10 42.00	13 10 33.81	0.34	0.13	6 48 1.1	6 47 12.6	2.0	1.9	0.5
7	13 10 25.73	13 10 17.76	- 0.34	0.13	S. 6 46 24.8	S. 6 45 37.7	+ 2.0	1.9	0.5
9	13 10 9.90	13 10 2.15	0.33	0.13	6 44 51.3	6 44 5.6	1.9	1.9	0.5
11	13 9 54.52	13 9 47.01	0.32	0.13	6 43 20.6	6 42 36.4	1.9	1.9	0.5
13	13 9 39.63	13 9 32.37	0.31	0.13	6 41 53.0	6 41 10.4	1.8	1.9	0.5
15	13 9 25.24	13 9 18.24	0.29	0.13	6 40 28.6	6 39 47.6	1.7	1.9	0.5
17	13 9 11.37	13 9 4.64	0.28	0.13	6 39 7.4	6 38 28.1	1.7	1.9	0.5
19	13 8 58.05	13 8 51.61	- 0.27	0.13	S. 6 37 49.7	S. 6 37 12.2	+ 1.6	1.9	0.5
21	13 8 45.31	13 8 39.15	0.26	0.13	6 36 35.6	6 35 59.9	1.5	1.9	0.5
23	13 8 33.15	13 8 27.30	0.25	0.13	6 35 25.1	6 34 51.3	1.4	1.9	0.5
25	13 8 21.60	13 8 16.06	- 0.23	0.13	S. 6 34 18.5	S. 6 33 46.6	+ 1.3	1.9	0.5

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Sid. Time of Sem. pass Mer.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Semidiameter.	Hor. Par.
	^h ^m ^s	^h ^m ^s	^s	^s	[°] ['] ["]	[°] ['] ["]	["]	["]	["]
May 27	13 8 10.68	13 8 5.46	- 0.22	0.13	S. 6 33 15.8	6 32 46.0	+ 1.3	1.9	0.5
29	13 8 0.41	13 7 55.52	- 0.20	0.13	6 32 17.2	6 31 49.4	1.2	1.9	0.5
31	13 7 50.80	13 7 46.25	0.19	0.13	6 31 22.7	6 30 57.0	1.1	1.9	0.5
June 2	13 7 41.87	13 7 37.67	0.18	0.13	6 30 32.5	6 30 9.0	1.0	1.9	0.5
4	13 7 33.65	13 7 29.80	0.16	0.13	6 29 46.6	6 29 25.3	0.9	1.9	0.5
6	13 7 26.13	13 7 22.64	0.15	0.13	6 29 5.1	6 28 46.1	0.8	1.9	0.5
8	13 7 19.32	13 7 16.19	- 0.13	0.13	S. 6 28 28.1	6 28 11.3	+ 0.7	1.9	0.5
10	13 7 13.25	13 7 10.48	0.12	0.13	6 27 55.6	6 27 41.0	0.6	1.9	0.5
12	13 7 7.90	13 7 5.50	0.10	0.13	6 27 27.6	6 27 15.4	0.5	1.9	0.5
14	13 7 3.29	13 7 1.27	0.09	0.13	6 27 4.3	6 26 54.3	0.4	1.9	0.5
16	13 6 59.44	13 6 57.79	0.07	0.13	6 26 45.6	6 26 38.0	0.3	1.9	0.5
18	13 6 56.34	13 6 55.08	0.06	0.13	6 26 31.6	6 26 26.4	0.2	1.9	0.5
20	13 6 54.01	13 6 53.13	- 0.04	0.13	S. 6 26 22.3	6 26 19.5	+ 0.1	1.9	0.5
22	13 6 52.45	13 6 51.96	0.02	0.13	6 26 17.8	6 26 17.4	0.0	1.9	0.5
24	13 6 51.67	13 6 51.57	- 0.01	0.13	6 26 18.1	6 26 20.1	- 0.1	1.9	0.5
26	13 6 51.66	13 6 51.95	+ 0.01	0.13	6 26 23.2	6 26 27.6	0.2	1.9	0.5
28	13 6 52.44	13 6 53.12	0.02	0.13	6 26 33.2	6 26 39.9	0.3	1.9	0.5
30	13 6 54.00	13 6 55.08	0.04	0.13	6 26 47.9	6 26 57.1	0.4	1.9	0.5
July 2	13 6 56.35	13 6 57.82	+ 0.06	0.13	S. 6 27 7.6	6 27 19.2	- 0.5	1.9	0.5
4	13 6 59.48	13 7 1.34	0.07	0.13	6 27 32.0	6 27 46.1	0.6	1.9	0.5
6	13 7 3.39	13 7 5.64	0.09	0.13	6 28 1.3	6 28 17.7	0.7	1.9	0.5
8	13 7 8.08	13 7 10.72	0.11	0.13	6 28 35.3	6 28 54.0	0.8	1.9	0.5
10	13 7 13.55	13 7 16.57	0.12	0.13	6 29 13.9	6 29 35.0	0.9	1.9	0.5
12	13 7 19.78	13 7 23.18	0.14	0.13	6 29 57.3	6 30 20.8	1.0	1.9	0.5
14	13 7 26.76	13 7 30.54	+ 0.15	0.13	S. 6 30 45.4	6 31 11.1	- 1.0	1.9	0.5
16	13 7 34.51	13 7 38.67	0.17	0.13	6 31 38.0	6 32 6.1	1.1	1.9	0.5
18	13 7 43.01	13 7 47.54	0.18	0.13	6 32 35.3	6 33 5.6	1.2	1.9	0.5
20	13 7 52.26	13 7 57.17	0.20	0.13	6 33 37.1	6 34 9.7	1.3	1.9	0.5
22	13 8 2.26	13 8 7.53	0.22	0.13	6 34 43.4	6 35 18.2	1.4	1.9	0.5
24	13 8 12.99	13 8 18.62	0.23	0.12	6 35 54.2	6 36 31.2	1.5	1.8	0.5
26	13 8 24.44	13 8 30.44	+ 0.25	0.12	S. 6 37 9.3	6 37 48.5	- 1.6	1.8	0.5
28	13 8 36.61	13 8 42.97	0.26	0.12	6 38 28.8	6 39 10.1	1.7	1.8	0.5
30	13 8 49.50	13 8 56.20	0.28	0.12	6 39 52.5	6 40 36.0	1.8	1.8	0.5
Aug. 1	13 9 3.07	13 9 10.12	0.29	0.12	6 41 20.5	6 42 5.9	1.9	1.8	0.5
3	13 9 17.34	13 9 24.73	0.30	0.12	6 42 52.4	6 43 39.9	2.0	1.8	0.5
5	13 9 32.28	13 9 40.00	0.32	0.12	6 44 28.3	6 45 17.8	2.0	1.8	0.5
7	13 9 47.88	13 9 55.93	+ 0.33	0.12	S. 6 46 8.2	6 46 59.5	- 2.1	1.8	0.5

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
Jan. 1	h m s	h m s	s	° ' "	° ' "	"	"
	3 52 21.56	3 52 16.76	-0.20	N.18 28 9.1	N.18 27 57.2	-0.5	0.3
3	3 52 12.07	3 52 7.48	0.19	18 27 45.6	18 27 34.4	0.5	0.3
5	3 52 3.01	3 52 58.65	0.18	18 27 23.6	18 27 13.1	0.4	0.3
7	3 51 54.39	3 51 50.25	0.18	18 27 3.0	18 26 53.3	0.4	0.3
9	3 51 46.22	3 51 42.31	0.17	18 26 44.0	18 26 35.1	0.4	0.3
11	3 51 38.52	3 51 34.85	0.16	18 26 26.7	18 26 18.6	0.3	0.3
13	3 51 31.29	3 51 27.86	-0.15	N.18 26 10.9	N.18 26 3.6	-0.3	0.3
15	3 51 24.55	3 51 21.37	0.14	18 25 56.7	18 25 50.2	0.3	0.3
17	3 51 18.31	3 51 15.38	0.12	18 25 44.1	18 25 38.5	0.2	0.3
19	3 51 12.57	3 51 9.90	0.11	18 25 33.3	18 25 28.5	0.2	0.3
21	3 51 7.36	3 51 4.95	0.10	18 25 24.1	18 25 20.2	0.2	0.3
23	3 51 2.67	3 51 0.52	0.09	18 25 16.7	18 25 13.7	0.1	0.3
25	3 50 58.51	3 50 56.63	-0.08	N.18 25 11.1	N.18 25 8.9	-0.1	0.3
27	3 50 54.88	3 50 53.28	0.07	18 25 7.1	18 25 5.8	-0.1	0.3
29	3 50 51.82	3 50 50.49	0.06	18 25 5.0	18 25 4.6	0.0	0.3
31	3 50 49.30	3 50 48.25	0.05	18 25 4.6	18 25 5.1	0.0	0.3
Feb. 2	3 50 47.34	3 50 46.58	0.03	18 25 6.0	18 25 7.4	0.0	0.3
4	3 50 45.93	3 50 45.47	0.02	18 25 9.3	18 25 11.6	+0.1	0.3
6	3 50 45.13	3 50 44.93	-0.01	N.18 25 14.4	N.18 25 17.6	+0.1	0.3
8	3 50 44.88	3 50 44.96	0.00	18 25 21.2	18 25 25.3	0.2	0.3
10	3 50 45.19	3 50 45.56	+0.01	18 25 29.8	18 25 34.7	0.2	0.3
12	3 50 46.08	3 50 46.73	0.02	18 25 40.1	18 25 45.9	0.2	0.3
14	3 50 47.53	3 50 48.46	0.04	18 25 52.2	18 25 58.9	0.3	0.3
16	3 50 49.54	3 50 50.76	0.05	18 26 6.1	18 26 13.7	0.3	0.3
18	3 50 52.12	3 50 53.62	+0.06	N.18 26 21.8	N.18 26 30.2	+0.3	0.3
20	3 50 55.27	3 50 57.05	0.07	18 26 39.1	18 26 48.4	0.4	0.3
22	3 50 58.97	3 51 1.03	0.08	18 26 58.2	18 27 8.3	0.4	0.3
24	3 51 3.23	3 51 5.57	0.09	18 27 18.9	18 27 29.9	0.5	0.3
26	3 51 8.05	3 51 10.66	0.11	18 27 41.3	18 27 53.1	0.5	0.3
28	3 51 13.41	3 51 16.30	0.12	18 28 5.3	18 28 18.0	0.5	0.3
Mar. 2	3 51 19.33	3 51 22.49	+0.13	N.18 28 31.0	N.18 28 44.4	+0.6	0.3
4	3 51 25.79	3 51 29.22	0.14	18 28 58.2	18 29 12.4	0.6	0.3
6	3 51 32.79	3 51 36.48	0.15	18 29 27.0	18 29 42.0	0.6	0.3
8	3 51 40.31	3 51 44.26	0.16	18 29 57.3	18 30 13.0	0.6	0.3
10	3 51 48.35	3 51 52.56	0.17	18 30 29.1	18 30 45.5	0.7	0.3
12	3 51 56.89	3 52 1.35	0.18	18 31 2.3	18 31 19.4	0.7	0.3
14	3 52 5.94	3 52 10.64	+0.19	N.18 31 36.9	N.18 31 54.7	+0.7	0.3
16	3 52 15.47	3 52 20.41	0.20	18 32 12.9	18 32 31.3	0.8	0.3
18	3 52 25.48	3 52 30.66	0.21	18 32 50.1	N.18 33 9.3	0.8	0.3
20	3 52 35.96		+0.22	N.18 33 28.7		+0.8	0.3

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
Oct. 7	h m s	h m s	s	° ' "	° ' "	"	"
9	4 10 39.37	4 10 35.30	-0.17	N.19 21 48.8	N.19 21 35.7	-0.5	0.3
11	4 10 31.12	4 10 26.84	0.18	19 21 22.3	19 21 8.7	0.6	0.3
13	4 10 22.44	4 10 17.94	0.19	19 20 54.8	19 20 40.7	0.6	0.3
15	4 10 13.33	4 10 8.62	0.19	19 20 26.3	19 20 11.7	0.6	0.3
17	4 10 3.80	4 9 58.89	0.20	19 19 56.8	19 19 41.7	0.6	0.3
19	4 9 53.87	4 9 48.76	0.21	19 19 26.4	19 19 10.8	0.6	0.3
21	4 9 43.55	4 9 38.25	-0.22	N.19 18 55.1	N.19 18 39.1	-0.7	0.3
23	4 9 32.85	4 9 27.37	0.23	19 18 22.9	19 18 6.6	0.7	0.3
25	4 9 21.80	4 9 16.14	0.23	19 17 50.0	19 17 33.3	0.7	0.3
27	4 9 10.40	4 9 4.58	0.24	19 17 16.4	19 16 59.3	0.7	0.3
29	4 8 58.69	4 8 52.71	0.25	19 16 42.0	19 16 24.6	0.7	0.3
31	4 8 46.67	4 8 40.55	0.25	19 16 7.0	19 15 49.3	0.7	0.3
Nov. 2	4 8 34.37	4 8 28.12	-0.26	N.19 15 31.4	N.19 15 13.4	-0.7	0.3
4	4 8 21.81	4 8 15.44	0.26	19 14 55.3	19 14 37.1	0.8	0.3
6	4 8 9.01	4 8 2.52	0.27	19 14 18.8	19 14 0.3	0.8	0.3
8	4 7 55.98	4 7 49.40	0.27	19 13 41.8	19 13 23.1	0.8	0.3
10	4 7 42.76	4 7 36.07	0.28	19 13 4.4	19 12 45.6	0.8	0.3
12	4 7 29.35	4 7 22.58	0.28	19 12 26.7	19 12 7.8	0.8	0.3
14	4 7 15.78	4 7 8.94	-0.28	N.19 11 48.8	N.19 11 29.8	-0.8	0.3
16	4 7 2.06	4 6 55.16	0.29	19 11 10.7	19 10 51.5	0.8	0.3
18	4 6 48.23	4 6 41.27	0.29	19 10 32.4	19 10 13.2	0.8	0.3
20	4 6 34.29	4 6 27.29	0.29	19 9 54.1	19 9 34.9	0.8	0.3
22	4 6 20.28	4 6 13.25	0.29	19 9 15.7	19 8 56.5	0.8	0.3
24	4 6 6.22	4 5 59.18	0.29	19 8 37.4	19 8 18.2	0.8	0.3
26	4 5 52.13	4 5 45.09	-0.29	N.19 7 59.1	N.19 7 40.1	-0.8	0.3
28	4 5 38.04	4 5 31.00	0.29	19 7 21.1	19 7 2.2	0.8	0.3
30	4 5 23.97	4 5 16.94	0.29	19 6 43.3	19 6 24.5	0.8	0.3
Dec. 2	4 5 9.93	4 5 2.94	0.29	19 6 5.8	19 5 47.2	0.8	0.3
4	4 4 55.97	4 4 49.02	0.29	19 5 28.7	19 5 10.3	0.8	0.3
6	4 4 42.10	4 4 35.20	0.29	19 4 52.0	19 4 33.9	0.8	0.3
8	4 4 28.34	4 4 21.51	-0.29	N.19 4 15.9	N.19 3 58.0	-0.7	0.3
10	4 4 14.71	4 4 7.95	0.28	19 3 40.3	19 3 22.7	0.7	0.3
12	4 4 1.23	4 3 54.56	0.28	19 3 5.3	19 2 48.0	0.7	0.3
14	4 3 47.93	4 3 41.35	0.28	19 2 30.9	19 2 14.1	0.7	0.3
16	4 3 34.82	4 3 28.35	0.27	19 1 57.4	19 1 40.9	0.7	0.3
18	4 3 21.93	4 3 15.57	0.27	19 1 24.5	19 1 8.4	0.7	0.3
20	4 3 9.27	4 3 3.04	-0.26	N.19 0 52.6	N.19 0 36.9	-0.7	0.3
22	4 2 56.87	4 2 50.77	0.26	19 0 21.5	19 0 6.3	0.6	0.3
24	4 2 44.75	4 2 38.80	0.25	18 59 51.4	18 59 36.8	0.6	0.3
26	4 2 32.93	4 2 27.14	0.24	18 59 22.3	18 59 8.2	0.6	0.3
28	4 2 21.42	4 2 15.80	0.24	18 58 54.4	18 58 40.8	0.6	0.3
30	4 2 10.26	4 2 4.82	0.23	18 58 27.5	18 58 14.5	0.5	0.3
32	4 1 59.47	4 1 54.21	-0.22	N.18 58 1.8	N.18 57 49.4	-0.5	0.3
	4 1 49.04		-0.21	N.18 57 37.4		-0.5	0.3

288 MEAN PLACES OF STARS, 1889.

FOR JANUARY 0-351. (See page 292.)

Star's Name.	Mag.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
α Andromedæ - - -	2	0 2 38.967	+ 3.0899	+28 28 39.44	+19.902
γ Pegasi (<i>Algenib</i>)	3.2	0 7 31.176	3.0839	+14 33 58.89	20.023
ϵ Ceti - - - - -	3.4	0 13 46.237	3.0531	- 9 26 21.78	19.957
β Hydri - - - - -	3	0 19 54.657	3.2509	-77 52 46.72	20.298
ι Ceti - - - - -	6	0 24 22.380	3.0591	- 4 34 14.25	19.930
α Cassiopeiæ - (var.)	2.3	0 34 12.574	3.3726	+55 55 42.33	19.790
β Ceti - - - - -	2	0 38 0.997	3.0113	-18 35 45.16	19.797
δ Piscium - - - -	4.5	0 42 55.342	3.1060	+ 6 58 50.71	19.652
ϵ Piscium - - - -	4	0 57 10.970	3.1127	+ 7 17 31.91	19.432
β Andromedæ - - -	2.3	1 3 31.052	3.3441	+35 1 55.17	19.198
α Urs. Min. (<i>Polaris</i>)	2	1 18 5.907	23.1720	+88 42 59.51	18.894
θ Ceti - - - - -	3	1 18 28.469	2.9964	- 8 45 22.85	18.668
η Piscium - - - -	4.3	1 25 32.574	3.2011	+14 46 23.77	18.671
α Eridani (<i>Achernar</i>)	1	1 33 34.693	2.2383	-57 48 3.19	18.372
ν Piscium - - - -	5.4	1 35 39.211	3.1153	+ 4 55 31.69	18.291
ρ Piscium - - - -	4	1 39 31.913	3.1636	+ 8 35 55.14	18.202
β Arietis - - - -	3.2	1 48 30.400	3.2997	+20 15 54.01	17.737
α Arietis - - - -	2	2 0 54.905	3.3695	+22 56 13.50	17.176
67 Ceti - - - - -	6	2 11 26.740	2.9873	- 6 56 2.67	16.704
ξ Ceti - - - - -	4	2 22 15.392	3.1823	+ 7 57 43.44	16.291
γ Ceti - - - - -	3.4	2 37 32.864	3.1025	+ 2 46 2.10	15.307
σ Arietis - - - -	6	2 45 21.776	3.3009	+14 37 26.51	15.005
α Ceti - - - - -	2.3	2 56 28.555	3.1300	+ 3 39 13.01	14.285
δ Arietis - - - -	4.5	3 5 16.883	3.4213	+19 18 22.84	13.848
α Persei - - - - -	2	3 16 23.920	4.2565	+49 27 55.06	13.078
ϵ Tauri - - - - -	4.3	3 18 50.449	3.2274	+ 8 38 15.15	12.866
ϵ Eridani - - - -	3	3 27 42.007	2.8231	- 9 50 4.78	12.323
η Tauri - - - - -	3	3 40 53.127	+ 3.5550	+23 45 40.14	11.377
γ Hydri - - - - -	3.4	3 48 57.770	- 0.9977	-74 34 43.06	11.002
γ Eridani - - - -	3	3 52 50.976	+ 2.7949	-13 49 30.05	10.442
Δ Tauri - - - - -	5.4	3 58 7.901	3.5370	+21 46 39.63	10.076
α Eridani - - - -	4.5	4 6 26.770	2.9235	- 7 7 38.92	9.602
γ Tauri - - - - -	4	4 13 28.564	3.4098	+15 21 32.20	8.957
ϵ Tauri - - - - -	4.3	4 22 8.028	3.4950	+18 56 0.40	8.274
α Tauri (<i>Aldebaran</i>)	1	4 29 33.045	3.4371	+16 17 7.67	7.538
μ Eridani - - - -	4.3	4 39 57.137	2.9986	- 3 27 31.35	6.851
ι Aurigæ - - - -	3	4 49 45.802	3.8970	+32 59 22.37	6.027
ϵ Leporis - - - -	4.3	5 0 45.707	2.5367	-22 31 14.36	5.054
α Aurigæ (<i>Capella</i>)	1	5 8 29.302	4.4250	+45 53 2.28	4.037
β Orionis (<i>Rigel</i>) -	1	5 9 12.163	2.8806	- 8 19 49.98	4.387
β Tauri - - - - -	2	5 19 16.500	3.7905	+28 30 45.80	3.343
δ Orionis - - - -	2	5 26 20.129	3.0647	- 0 22 55.67	2.892
ϵ Leporis - - - -	3	5 27 50.030	2.6460	-17 54 10.01	2.803
ϵ Orionis - - - -	2	5 30 34.792	3.0411	- 1 16 24.56	2.555
α Columbæ - - - -	2	5 35 37.830	2.1734	-34 8 2.21	2.084
κ Orionis - - - -	3.2	5 42 29.497	2.8444	- 9 42 35.33	1.498
α Orionis - - (var.)	1	5 49 9.704	3.2466	+ 7 23 8.25	+ 0.945
ν Orionis - - - -	5.4	6 1 14.063	3.4263	+14 46 52.00	- 0.130
η Geminorum - - -	3.4	6 8 10.597	3.6200	+22 32 17.33	0.738
μ Geminorum - - -	3	6 16 14.727	+ 3.6318	+22 34 10.63	- 1.563

MEAN PLACES OF STARS, 1889. 28

FOR JANUARY 0—351. (See page 292.)

Star's Name.	Mag.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
<i>α</i> Argūs (<i>Canopus</i>) -	1	6 21 29.181	+ 1.3304	-52 38 7.08	- 1.880
<i>γ</i> Geminorum - -	2.3	6 31 17.906	3.4657	+16 29 35.73	2.773
<i>ε</i> Geminorum - -	4.3	6 39 3.599	3.3701	+13 0 51.99	3.624
<i>α</i> Canis Maj. (<i>Sirius</i>)	1	6 40 15.301	2.6462	-16 33 53.57	4.748
Cephei 51 (<i>Hev.</i>) -	5	6 48 16.508	29.9440	+87 13 8.73	4.293
<i>θ</i> Canis Majoris - -	4.5	6 49 1.944	2.7872	-11 54 1.05	4.290
<i>ι</i> Canis Majoris - -	2.1	6 54 15.793	2.3574	-28 49 17.66	4.725
<i>γ</i> Canis Majoris - -	4.5	6 58 44.255	2.7166	-15 28 12.28	5.096
<i>δ</i> Geminorum - -	3.4	7 13 29.643	3.5899	+22 11 9.25	6.343
<i>β</i> Canis Minoris - -	3	7 21 7.859	3.2562	+ 8 30 44.31	7.004
<i>α</i> * Geminor. (<i>Castor</i>)	2.1	7 27 31.039	3.8386	+32 7 52.39	7.557
<i>α</i> * Geminorum - -		Δα .. -0.370		Δδ .. -3.84	
<i>α</i> Can. Min. (<i>Procyon</i>)	1	7 33 29.402	3.1430	+ 5 30 30.96	9.039
<i>β</i> Geminor. (<i>Pollux</i>)	1.2	7 38 31.355	3.6776	+28 17 36.56	8.422
<i>ε</i> Argūs - - - -	4.3	7 44 37.577	2.5246	-24 34 50.72	8.821
<i>6</i> Cancrī - - - -	5	7 56 41.973	3.6909	+28 6 17.17	9.848
<i>15</i> Argūs - - - -	3	8 2 48.987	2.5541	-23 59 4.61	10.182
<i>β</i> Cancrī - - - -	4.3	8 10 29.714	3.2575	+ 9 31 36.87	10.863
<i>η</i> Cancrī - - - -	6	8 26 17.341	3.4757	+20 49 3.39	12.011
<i>γ</i> Cancrī - - - -	4.5	8 36 51.673	3.4772	+21 52 2.08	12.671
<i>ι</i> Hydræ - - - -	3.4	8 40 53.838	3.1816	+ 6 49 32.17	12.992
<i>ι</i> Ursæ Majoris - -	3	8 51 36.246	4.1313	+48 28 36.40	13.935
<i>α</i> Cancrī - - - -	4	8 52 24.921	3.2850	+12 17 12.66	13.745
<i>κ</i> Cancrī - - - -	5	9 1 44.082	3.2547	+11 6 52.06	14.288
<i>83</i> Cancrī - - - -	6	9 12 47.080	3.3530	+18 10 31.01	15.111
<i>ι</i> Argūs - - - -	2	9 14 7.073	1.6061	-58 48 34.25	15.028
<i>α</i> Hydræ - - - -	2	9 22 7.911	2.9464	- 8 10 40.18	15.452
<i>θ</i> Ursæ Majoris - -	3	9 25 25.656	4.0367	+52 10 56.99	16.238
<i>ι</i> Leonis - - - -	4.3	9 35 13.528	3.2043	+10 23 48.88	16.227
<i>ι</i> Leonis - - - -	3	9 39 32.995	3.4154	+24 17 5.43	16.426
<i>μ</i> Leonis - - - -	4	9 46 26.935	3.4187	+26 31 45.21	16.806
<i>π</i> Leonis - - - -	5	9 54 20.850	3.1745	+ 8 34 35.19	17.146
<i>α</i> Leonis (<i>Regulus</i>)	1.2	10 2 27.575	3.1990	+12 30 33.81	17.465
<i>γ</i> * Leonis - - - -	2	10 13 51.097	3.3136	+20 24 9.13	18.092
<i>γ</i> * Leonis - - - -		Δα .. +0.210		Δδ .. -1.34	
<i>μ</i> Hydræ - - - -	4	10 20 43.326	2.8087	-16 16 11.82	18.312
<i>η</i> Leonis - - - -	4	10 26 57.994	3.1644	+ 9 52 38.36	18.455
<i>η</i> Argūs - - (var.)	1-6	10 40 45.277	2.3137	-59 6 3.77	18.869
<i>ι</i> Leonis - - - -	5	10 43 25.314	3.1557	+11 7 56.37	18.965
<i>δ</i> Leonis - - - -	5	10 54 49.644	3.0981	+ 4 12 47.42	19.279
<i>α</i> Ursæ Majoris - -	2	10 56 52.336	3.7488	+62 21 0.06	19.389
<i>χ</i> Leonis - - - -	5	10 59 17.460	3.0972	+ 7 56 8.56	19.435
<i>δ</i> Leonis - - - -	2.3	11 8 12.291	3.1992	+21 7 53.72	19.684
<i>δ</i> Crateris - - - -	3.4	11 13 47.470	2.9959	-14 10 40.91	19.468
<i>τ</i> Leonis - - - -	5	11 22 13.707	3.0848	+ 3 28 2.93	19.802
<i>λ</i> Draconis - - - -	3.4	11 24 48.422	3.6227	+69 56 36.07	19.879
<i>ν</i> Leonis - - - -	5.4	11 31 15.865	3.0689	- 0 12 39.67	19.866
<i>β</i> Leonis - - - -	2	11 43 23.834	3.0627	+15 11 33.02	20.101
<i>γ</i> Ursæ Majoris - -	2.3	11 47 59.386	3.1807	+54 18 42.74	20.027
<i>π</i> Virginis - - - -	4.5	11 55 11.095	3.0760	+ 7 13 59.26	20.089
<i>ι</i> Corvi - - - -	3	12 4 24.963	3.0780	-22 0 7.50	20.040
<i>β</i> Chamæleontis - -	5	12 11 51.114	+ 3.4079	-78 41 44.10	-19.977

90 MEAN PLACES OF STARS, 1889.

FOR JANUARY 0—^d351. (See page 292.)

Star's Name.	Mag.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
η Virginis - - - -	3.4	12 14 13 ^s .563	+ 3 ^s .0656	- 0 2 59 ^s .35	-20 ^s .045
α ¹ Crucis - - - -	1	12 20 25 ^s .571	3 ^s .2930	-62 29 0 ^s .86	19 ^s .993
α ² Crucis - - - -		Δα .. +0 ^s .630		Δδ .. -3 ^s .05	
δ ¹ Corvi - - - -	2.3	12 24 7 ^s .400	3 ^s .1056	-15 53 50 ^s .64	20 ^s .092
β Corvi - - - -	2.3	12 28 33 ^s .258	3 ^s .1343	-22 46 57 ^s .79	19 ^s .968
γ ¹ Virginis - - - -	3.2	12 36 2 ^s .050	3 ^s .0386	- 0 50 24 ^s .26	19 ^s .856
γ ² Virginis - - - -		Δα .. +0 ^s .170		Δδ .. -4 ^s .97	
δ Virginis - - - -	3	12 50 0 ^s .741	3 ^s .0222	+ 4 0 2 ^s .42	19 ^s .667
α Canum Venaticor. -	3	12 50 50 ^s .096	2 ^s .8119	+38 55 4 ^s .47	19 ^s .501
ε Virginis - - - -	3.2	12 56 39 ^s .095	2 ^s .9876	+11 33 21 ^s .32	19 ^s .413
θ Virginis - - - -	4.5	13 4 12 ^s .136	3 ^s .1005	- 4 56 46 ^s .23	19 ^s .311
α Virginis (<i>Spica</i>) -	1	13 19 20 ^s .660	3 ^s .1523	-10 34 54 ^s .15	18 ^s .902
ζ Virginis - - - -	3.4	13 29 2 ^s .221	3 ^s .0538	- 0 1 40 ^s .90	18 ^s .498
τ Bootis - - - -	5.4	13 41 59 ^s .235	2 ^s .8514	+18 0 37 ^s .27	18 ^s .049
η Ursæ Majoris - -	2	13 43 9 ^s .967	2 ^s .3704	+49 52 2 ^s .59	18 ^s .084
η Bootis - - - -	3	13 49 23 ^s .975	2 ^s .8575	+18 57 15 ^s .15	18 ^s .171
β Centauri - - - -	1	13 55 59 ^s .599	4 ^s .1829	-59 50 13 ^s .64	17 ^s .595
τ Virginis - - - -	4.5	13 55 59 ^s .838	3 ^s .0500	+ 2 4 54 ^s .16	17 ^s .608
α Draconis - - - -	3.4	14 1 22 ^s .983	1 ^s .6202	+64 54 23 ^s .22	17 ^s .305
α Bootis (<i>Arcturus</i>)	1	14 10 35 ^s .870	2 ^s .7341	+19 45 39 ^s .05	18 ^s .812
f Bootis - - - -	5	14 21 17 ^s .707	2 ^s .7964	+19 43 34 ^s .83	16 ^s .321
ρ Bootis - - - -	4.3	14 27 2 ^s .753	2 ^s .5864	+30 51 32 ^s .14	15 ^s .925
α ¹ Centauri - - - -	1	14 32 4 ^s .341	4 ^s .0342	-60 22 28 ^s .41	15 ^s .057
α ² Centauri - - - -		Δα .. -1 ^s .012		Δδ .. -15 ^s .92	
α ³ Bootis - - - -	2.3	14 40 8 ^s .327	2 ^s .6190	+27 32 32 ^s .79	15 ^s .343
α Libræ - - - -	2.3	14 44 44 ^s .276	+ 3 ^s .3111	-15 34 47 ^s .65	15 ^s .151
β Ursæ Minoris - -	2	14 51 2 ^s .025	- 0 ^s .2288	+74 36 32 ^s .37	14 ^s .754
ψ Bootis - - - -	4.5	14 59 41 ^s .348	+ 2 ^s .5705	+27 22 51 ^s .03	14 ^s .197
β Libræ - - - -	2	15 11 1 ^s .971	3 ^s .2199	- 8 58 21 ^s .74	13 ^s .489
α Coronæ - - - -	2	15 29 59 ^s .268	2 ^s .5391	+27 5 19 ^s .43	12 ^s .277
α Serpentis - - - -	2.3	15 38 48 ^s .005	2 ^s .9519	+ 6 46 30 ^s .97	11 ^s .537
ε Serpentis - - - -	3.4	15 45 16 ^s .974	+ 2 ^s .9889	+ 4 48 44 ^s .69	11 ^s .049
ζ Ursæ Minoris - -	4.5	15 48 2 ^s .344	- 2 ^s .2345	+78 8 6 ^s .69	11 ^s .002
β ¹ Scorpii - - - -	2	15 58 58 ^s .945	+ 3 ^s .4795	-19 30 2 ^s .92	10 ^s .122
δ Ophiuchi - - - -	3	16 8 31 ^s .644	3 ^s .1369	- 3 24 27 ^s .93	9 ^s .502
γ Herculis - - - -	3	16 17 1 ^s .375	2 ^s .6441	+19 24 51 ^s .81	8 ^s .649
η ¹ Draconis - - - -	3.2	16 22 29 ^s .399	0 ^s .8100	+61 45 55 ^s .05	8 ^s .266
α Scorpii (<i>Antares</i>) -	1.2	16 22 36 ^s .076	3 ^s .6706	-26 11 5 ^s .70	8 ^s .296
ζ Ophiuchi - - - -	3.2	16 31 2 ^s .782	3 ^s .2993	-10 20 29 ^s .26	7 ^s .557
α Trianguli Australis	2	16 36 54 ^s .988	6 ^s .3013	-68 49 20 ^s .51	7 ^s .139
ζ Herculis - - - -	3.2	16 37 6 ^s .153	2 ^s .2632	+31 48 16 ^s .18	6 ^s .644
κ Ophiuchi - - - -	3.4	16 52 24 ^s .780	+ 2 ^s .8344	+ 9 32 53 ^s .46	5 ^s .806
ε Ursæ Minoris - -	4.5	16 57 21 ^s .664	- 6 ^s .3370	+82 13 7 ^s .64	5 ^s .408
η Ophiuchi - - - -	2.3	17 4 0 ^s .680	+ 3 ^s .4355	-15 35 11 ^s .68	4 ^s .728
α ¹ Herculis - (var.) -	3.4	17 9 35 ^s .107	2 ^s .7317	+14 31 2 ^s .66	4 ^s .334
θ Ophiuchi - - - -	3.4	17 15 11 ^s .500	3 ^s .6780	-24 53 15 ^s .46	3 ^s .873
σ Ophiuchi - - - -	5	17 21 0 ^s .424	2 ^s .9759	+ 4 14 15 ^s .12	3 ^s .374
β Draconis - - - -	3.2	17 27 55 ^s .427	1 ^s .3516	+52 23 1 ^s .57	2 ^s .796
α Ophiuchi - - - -	2	17 29 46 ^s .821	2 ^s .7793	+12 38 29 ^s .31	2 ^s .834
β Ophiuchi - - - -	3	17 37 59 ^s .271	2 ^s .9599	+ 4 36 51 ^s .58	1 ^s .751
μ Herculis - - - -	3.4	17 42 6 ^s .815	2 ^s .3441	+27 47 9 ^s .84	2 ^s .301
γ Draconis - - - -	2.3	17 54 1 ^s .669	+ 1 ^s .3923	+51 30 7 ^s .27	- 0 ^s .561

MEAN PLACES OF STARS, 1889. 29

FOR JANUARY 0—^d351. (See page 292.)

Star's Name.	Mag.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		^h ^m ^s	^s	[°] ['] ["]	["]
72 Ophiuchi - - -	3.4	18 2 52.03	+ 2.8427	+ 9 32 54.14	+ 0.245
μ Sagittarii - - -	4	18 7 7.436	+ 3.5838	- 21 5 13.68	0.616
δ Ursæ Minoris - -	4.5	18 8 7.096	- 19.4450	+ 86 36 40.63	0.727
η Serpentis - - -	3	18 15 33.930	+ 3.1017	- 2 55 36.23	0.684
λ Sagittarii - - -	3	18 21 7.179	3.7020	- 25 28 56.20	1.608
α Lyræ (<i>Vega</i>) - -	1	18 33 10.766	2.0305	+ 38 40 50.34	3.173
σ Octantis - - -	6	18 40 35.580	105.9900	- 89 16 4.68	3.590
β Lyræ - - (var.)	4	18 45 58.851	2.2120	+ 33 14 2.75	3.968
ε Aquilæ - - -	4	18 54 34.984	2.7183	+ 14 55 4.47	4.633
ζ Aquilæ - - -	3	19 0 18.395	2.7519	+ 13 41 56.43	5.148
ω Aquilæ - - -	6.5	19 12 36.324	2.8134	+ 11 23 45.00	6.270
δ Aquilæ - - -	3.4	19 19 54.026	3.0230	+ 2 53 38.62	6.952
κ Sagittarii - - -	5.4	19 29 57.111	+ 3.6538	- 25 7 39.24	7.693
λ Ursæ Minoris - -	6.7	19 34 38.735	- 64.8610	+ 88 57 52.56	8.013
γ Aquilæ - - -	3	19 40 58.929	+ 2.8528	+ 10 20 35.33	8.554
α Aquilæ (<i>Altair</i>) -	1.2	19 45 22.026	2.9279	+ 8 34 32.21	9.279
β Aquilæ - - -	4	19 49 51.630	2.9470	+ 6 7 47.62	8.781
θ Aquilæ - - -	3	20 5 34.614	3.0964	- 1 9 0.72	10.448
α Capricorni - - -	3.4	20 11 53.696	3.3301	- 12 53 18.13	10.916
α Pavonis - - -	2	20 16 51.693	4.7778	- 57 5 21.99	11.235
ρ Capricorni - - -	5	20 22 31.660	3.4232	- 18 10 47.89	11.675
ι Delphini - - -	4	20 27 54.565	2.8653	+ 10 55 34.66	12.033
α Cygni - - -	2.1	20 37 38.802	2.0418	+ 44 53 2.32	12.733
ε Aquarii - - -	4.3	20 41 39.965	3.2492	- 9 54 5.43	12.993
32 Vulpeculæ - - -	5.6	20 49 49.720	2.5541	+ 27 38 8.63	13.538
θ Capricorni - - -	4	20 59 42.400	3.3780	- 17 40 24.05	14.113
61 Cygni - - -	5.6	21 1 55.121	2.6739	+ 38 12 13.60	17.509
ζ Cygni - - -	3	21 8 12.652	2.5484	+ 29 46 18.38	14.610
α Cephei - - -	3.2	21 15 55.734	1.4353	+ 62 6 54.69	15.140
β Aquarii - - -	3	21 25 42.869	3.1600	- 6 3 32.90	15.680
β Cephei - - -	3	21 27 13.459	0.7922	+ 70 4 23.67	15.720
ε Pegasi - - -	2.3	21 38 44.071	2.9480	+ 9 21 58.77	16.365
16 Pegasi - - -	5.6	21 48 0.691	2.7277	+ 25 24 10.78	16.810
α Aquarii - - -	3	22 0 4.884	3.0795	- 0 51 31.49	17.351
α Gruis - - -	2	22 1 14.003	3.8034	- 47 29 53.38	17.264
θ Aquarii - - -	4.5	22 10 58.525	3.1681	- 8 20 8.31	17.798
γ Aquarii - - -	4.3	22 15 55.337	3.0994	- 1 56 46.27	18.042
γ Aquarii - - -	4.3	22 29 39.089	3.0817	- 0 41 21.12	18.456
ζ Pegasi - - -	3.4	22 35 55.485	2.9867	+ 10 15 7.67	18.720
λ Aquarii - - -	4	22 46 49.267	3.1267	- 8 10 12.12	19.071
α Pis. Aus. (<i>Fomalhaut</i>)	1.2	22 51 30.909	3.3236	- 30 12 37.54	18.984
α Pegasi (<i>Markab</i>) -	2	22 59 13.875	2.9842	+ 14 36 29.42	19.333
γ Piscium - - -	4	23 11 24.586	3.1063	+ 2 40 32.67	19.595
κ Piscium - - -	5.4	23 21 14.504	3.0750	+ 0 38 52.91	19.648
ι Piscium - - -	4.5	23 34 14.457	3.0844	+ 5 1 28.79	19.477
γ Cephei - - -	3.4	23 34 47.651	2.4165	+ 77 0 46.33	20.082
δ Sculptoris - - -	4.5	23 43 8.622	3.1353	- 28 44 38.36	19.899
α Piscium - - -	4	23 53 36.665	+ 3.0785	+ 6 14 55.38	+ 19.915

BESSEL'S FORMULÆ OF REDUCTION.

1.—*Adopting the Notation of the British Association Catalogue and the Coefficients of Professor Peters (Numerus Constans Nutationis, p. 75).*

$$A = -20''.4451 \cos \alpha \cos \odot$$

$$B = -20''.4451 \sin \odot$$

$$C = t - 0''.02519 \sin 2\odot - 0''.34248 \sin \mathfrak{Q} + 0''.00410 \sin 2 \mathfrak{Q} - 0''.00405 \sin 2 \mathfrak{C}$$

$$D = -0''.5506 \cos 2 \odot - 9''.2239 \cos \mathfrak{Q} + 0''.0896 \cos 2 \mathfrak{Q} - 0''.0885 \cos 2 \mathfrak{C}$$

$$a = \cos \alpha \sec \delta$$

$$b = \sin \alpha \sec \delta$$

$$c = 46''.0876 + 20''.0531 \sin \alpha \tan \delta$$

$$d = \cos \alpha \tan \delta$$

$$a' = \tan \alpha \cos \delta - \sin \alpha \sin \delta$$

$$b' = \cos \alpha \sin \delta$$

$$c' = 20''.0531 \cos \alpha$$

$$d' = -\sin \alpha$$

Δc = the annual proper motion in Right Ascension, *in arc*.

$\Delta c'$ = the annual proper motion in Declination.

Where t denotes the time reckoned from the moment when the Sun's mean longitude was 280° (Jan. 0^d - .351) and expressed in fractional parts of a tropical year, \odot the Sun's and \mathfrak{C} the Moon's true longitude, \mathfrak{Q} the mean longitude of the Moon's node, and α the obliquity of the Ecliptic, each for the time t : α the mean Right Ascension, *in arc*, and δ the mean Declination for the beginning of the year. Then, for the time represented by t ,

$$\text{Apparent R.A., in arc,} = \alpha + Aa + Bb + Cc + Dd + t\Delta c.$$

$$\text{Apparent Dec.} \quad - \quad - \quad - \quad = \delta + Aa' + Bb' + Cc' + Dd' + t\Delta c'.$$

2.—*Using the same Notation and Coefficients, and assuming*

$$46''.0876 C = f \qquad B = h \cos H$$

$$20''.0531 C = g \cos G \qquad A = h \sin H$$

$$D = g \sin G \qquad A \tan \alpha = i$$

$$\text{Apparent R.A., in arc,} = \alpha + f + t\Delta c \\ + g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta$$

$$\text{Apparent Dec.} \quad - \quad - \quad - \quad = \delta + i \cos \delta + t\Delta c' \\ + g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta$$

APPARENT PLACES OF STARS, 1889. 293

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
Jan. 1	-0°58'58	+1°30'12	-9°48'50	+0°58'74	1°32'525	1°65'330	9°95'158	1°46'041	73°6'10
2	°62'11	°29'55	°48'01	°58'56	°31'850	°65'255	°95'326	°46'017	74°02'8
3	°65'36	°29'77	°47'52	°58'37	°31'168	°65'173	°95'491	°45'992	74°45'3
4	°68'37	°29'57	°47'02	°58'17	°30'477	°65'086	°95'654	°45'965	74°88'5
5	°71'17	°29'36	°46'52	°57'97	°29'779	°64'992	°95'816	°45'938	75°32'4
6	-0°73'79	+1°29'13	-9°46'01	+0°57'75	1°29'073	1°64'892	9°95'977	1°45'910	75°77'0
7	°76'25	°28'89	°45'50	°57'53	°28'359	°64'785	°96'137	°45'880	76°22'2
8	°78'56	°28'63	°44'99	°57'30	°27'638	°64'672	°96'296	°45'850	76°67'9
9	°80'74	°28'36	°44'47	°57'06	°26'909	°64'553	°96'453	°45'819	77°14'3
10	°82'80	°28'07	°43'95	°56'82	°26'173	°64'428	°96'608	°45'787	77°61'5
11	-0°84'76	+1°27'76	-9°43'43	+0°56'56	1°25'430	1°64'296	9°96'762	1°45'754	78°09'1
12	°86'62	°27'44	°42'91	°56'30	°24'678	°64'158	°96'914	°45'721	78°57'2
13	°88'39	°27'10	°42'38	°56'04	°23'920	°64'014	°97'064	°45'688	79°06'0
14	°90'08	°26'75	°41'85	°55'76	°23'155	°63'863	°97'214	°45'653	79°55'2
15	°91'69	°26'38	°41'32	°55'48	°22'382	°63'706	°97'362	°45'618	80°04'9
16	-0°93'23	+1°25'99	-9°40'79	+0°55'20	1°21'603	1°63'542	9°97'508	1°45'582	80°55'1
17	°94'70	°25'59	°40'25	°54'90	°20'816	°63'373	°97'652	°45'545	81°05'8
18	°96'11	°25'17	°39'71	°54'60	°20'023	°63'197	°97'794	°45'508	81°56'9
19	°97'46	°24'73	°39'17	°54'29	°19'224	°63'014	°97'934	°45'470	82°08'5
20	0°98'76	°24'47	°38'63	°53'97	°18'417	°62'825	°98'073	°45'432	82°60'4
21	-1°00'01	+1°23'79	-9°38'09	+0°53'65	1°17'605	1°62'630	9°98'210	1°45'393	83°12'8
22	°01'21	°23'30	°37'54	°53'32	°16'786	°62'428	°98'346	°45'353	83°65'6
23	°02'36	°22'88	°36'99	°52'99	°15'962	°62'219	°98'480	°45'313	84°18'7
24	°03'47	°22'25	°36'44	°52'65	°15'132	°62'004	°98'612	°45'273	84°72'2
25	°04'54	°21'69	°35'89	°52'31	°14'297	°61'782	°98'743	°45'232	85°26'0
26	-1°05'57	+1°21'12	-9°35'34	+0°51'96	1°13'456	1°61'555	9°98'872	1°45'190	85°80'0
27	°06'56	°20'52	°34'79	°51'60	°12'611	°61'320	°98'999	°45'148	86°34'3
28	°07'52	°19'90	°34'23	°51'24	°11'761	°61'079	°99'124	°45'107	86°88'9
29	°08'44	°19'26	°33'68	°50'87	°10'908	°60'831	°99'248	°45'065	87°43'6
30	°09'33	°18'59	°33'12	°50'50	°10'050	°60'577	°99'370	°45'023	87°98'5
31	-1°10'19	+1°17'90	-9°32'57	+0°50'13	1°09'189	1°60'316	9°99'490	1°44'981	88°53'7
Feb. 1	°11'02	°17'19	°32'01	°49'75	°08'326	°60'048	°99'609	°44'938	89°09'0
2	°11'81	°16'45	°31'45	°49'36	°07'459	°59'774	°99'726	°44'895	89°64'5
3	°12'58	°15'68	°30'90	°48'98	°06'590	°59'492	°99'840	°44'853	90°20'2
4	°13'33	°14'89	°30'34	°48'59	°05'721	°59'204	9°99'953	°44'810	90°75'9
5	-1°14'05	+1°14'06	-9°29'78	+0°48'20	1°04'850	1°58'910	0°00'065	1°44'767	91°31'6
6	°14'74	°13'21	°29'22	°47'80	°03'980	°58'609	°00'175	°44'725	91°87'4
7	°15'41	°12'33	°28'66	°47'40	°03'108	°58'301	°00'284	°44'683	92°43'2
8	°16'05	°11'42	°28'09	°47'00	°02'238	°57'986	°00'391	°44'641	92°99'0
9	°16'67	°10'47	°27'53	°46'60	°01'372	°57'664	°00'497	°44'598	93°54'7
10	-1°17'27	+1°09'49	-9°26'97	+0°46'20	1°00'506	1°57'336	0°00'601	1°44'556	94°10'5
11	°17'85	°08'47	°26'41	°45'80	°00'9642	°57'000	°00'703	°44'514	94°66'2
12	°18'41	°07'42	°25'85	°45'39	°98'784	°56'658	°00'803	°44'473	95°21'8
13	°18'94	°06'32	°25'29	°44'99	°97'929	°56'309	°00'903	°44'432	95°77'3
14	°19'45	°05'18	°24'72	°44'58	°97'080	°55'952	°01'001	°44'391	96°32'6
15	-1°19'95	+1°04'00	-9°24'16	+0°44'18	0°96'239	1°55'589	0°01'098	1°44'351	96°87'8

294 APPARENT PLACES OF STARS, 1889.

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
Feb. 16	-1°2042	+1°0278	-9°2359	+0°4377	0°95405	1°55219	0°01193	1°44311	97°428
17	'2088	'0150	'2303	'4337	'94578	'54841	'01287	'44271	97°976
18	'2132	1°0018	'2246	'4297	'93762	'54457	'01379	'44232	98°523
19	'2174	0°9879	'2190	'4257	'92954	'54065	'01469	'44194	99°068
20	'2215	'9735	'2133	'4218	'92159	'53666	'01559	'44156	99°610
21	-1°2253	+0°9585	-9°2077	+0°4179	0°91377	1°53260	0°01648	1°44118	100°148
22	'2290	'9428	'2020	'4140	'90609	'52847	'01735	'44082	100°684
23	'2326	'9263	'1963	'4101	'89855	'52426	'01821	'44046	101°216
24	'2359	'9091	'1906	'4063	'89119	'51998	'01907	'44010	101°745
25	'2391	'8911	'1849	'4025	'88400	'51563	'01991	'43976	102°271
26	-1°2422	+0°8721	-9°1792	+0°3988	0°87699	1°51119	0°02074	1°43942	102°793
27	'2451	'8521	'1735	'3952	'87019	'50669	'02157	'43908	103°311
28	'2479	'8311	'1677	'3916	'86362	'50212	'02237	'43876	103°825
Mar. 1	'2505	'8088	'1619	'3881	'85726	'49746	'02316	'43844	104°334
2	'2529	'7852	'1561	'3846	'85114	'49273	'02395	'43813	104°839
3	-1°2552	+0°7601	-9°1503	+0°3812	0°84529	1°48793	0°02474	1°43783	105°338
4	'2574	'7334	'1445	'3779	'83971	'48305	'02552	'43754	105°832
5	'2594	'7047	'1386	'3746	'83438	'47809	'02630	'43726	106°321
6	'2612	'6740	'1326	'3715	'82940	'47306	'02706	'43699	106°805
7	'2630	'6408	'1266	'3684	'82468	'46794	'02781	'43673	107°283
8	-1°2646	+0°6046	-9°1206	+0°3655	0°82029	1°46275	0°02856	1°43648	107°755
9	'2660	'5651	'1146	'3626	'81623	'45749	'02930	'43624	108°221
10	'2673	'5215	'1085	'3598	'81255	'45214	'03004	'43601	108°681
11	'2685	'4730	'1024	'3571	'80915	'44672	'03077	'43578	109°135
12	'2695	'4182	'0961	'3546	'80610	'44121	'03150	'43557	109°582
13	-1°2704	+0°3553	-9°0898	+0°3521	0°80345	1°43563	0°03223	1°43537	110°022
14	'2712	'2817	'0834	'3498	'80118	'42997	'03295	'43517	110°456
15	'2719	'1930	'0770	'3476	'79929	'42422	'03367	'43499	110°883
16	'2724	0°0812	'0705	'3455	'79777	'41839	'03439	'43482	111°303
17	'2728	9°9302	'0638	'3435	'79663	'41249	'03510	'43465	111°715
18	-1°2730	+9°6967	-9°0571	+0°3416	0°79588	1°40650	0°03581	1°43450	112°120
19	'2731	+9°1560	'0503	'3398	'79553	'40042	'03652	'43436	112°517
20	'2731	-9°3237	'0434	'3382	'79555	'39427	'03722	'43423	113°907
21	'2730	9°7517	'0364	'3367	'79601	'38802	'03793	'43411	113°289
22	'2727	9°9628	'0292	'3353	'79681	'38170	'03864	'43400	113°663
23	-1°2723	-0°1041	-9°0219	+0°3341	0°79801	1°37528	0°03935	1°43390	114°028
24	'2718	'2104	'0144	'3330	'79958	'36879	'04006	'43381	114°385
25	'2711	'2956	9°0069	'3320	'80156	'36220	'04077	'43373	114°734
26	'2703	'3666	8°9991	'3311	'80389	'35553	'04148	'43367	115°074
27	'2694	'4275	'9912	'3304	'80657	'34877	'04219	'43361	115°406
28	-1°2683	-0°4808	-8°9831	+0°3298	0°80963	1°34193	0°04290	1°43356	115°729
29	'2671	'5280	'9748	'3293	'81300	'33499	'04362	'43352	116°044
30	'2658	'5705	'9663	'3290	'81674	'32797	'04434	'43349	116°349
31	'2644	'6091	'9576	'3287	'82080	'32086	'04507	'43347	116°645
Apr. 1	'2628	'6444	'9485	'3286	'82515	'31366	'04579	'43347	116°932
2	-1°2611	-0°6769	-8°9392	+0°3286	0°82982	1°30638	0°04652	1°43347	117°209

APPARENT PLACES OF STARS, 1889. 295

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
Apr. 3	-1°2592	-0°7070	-8°9297	+0°3287	0°83478	1°29900	0°04726	1°43348	117°477
4	°2572	°7350	°9199	°3290	°84002	°29153	°04800	°43350	117°736
5	°2551	°7612	°9097	°3293	°84551	°28398	°04874	°43353	117°985
6	°2529	°7857	°8993	°3298	°85126	°27633	°04949	°43357	118°224
7	°2505	°8088	°8885	°3304	°85726	°26860	°05024	°43361	118°454
8	-1°2479	-0°8306	-8°8773	+0°3310	0°86348	1°26077	0°05100	1°43366	118°674
9	°2452	°8513	°8656	°3318	°86990	°25286	°05177	°43372	118°884
10	°2424	°8708	°8535	°3326	°87655	°24485	°05255	°43379	119°084
11	°2394	°8894	°8411	°3336	°88337	°23675	°05333	°43386	119°274
12	°2363	°9071	°8282	°3346	°89034	°22857	°05412	°43394	119°454
13	-1°2330	-0°9239	-8°8143	+0°3358	0°89749	1°22029	0°05492	1°43403	119°625
14	°2296	°9400	°8001	°3370	°90480	°21193	°05572	°43413	119°785
15	°2261	°9554	°7853	°3382	°91223	°20347	°05653	°43423	119°935
16	°2224	°9701	°7698	°3396	°91979	°19491	°05734	°43434	120°075
17	°2185	°9843	°7534	°3410	°92748	°18628	°05816	°43445	120°204
18	-1°2144	-0°9978	-8°7363	+0°3425	0°93527	1°17755	0°05899	1°43457	120°323
19	°2102	1°0108	°7183	°3440	°94314	°16872	°05984	°43470	120°432
20	°2059	°0233	°6992	°3456	°95111	°15982	°06069	°43483	120°531
21	°2013	°0354	°6791	°3473	°95914	°15082	°06155	°43496	120°619
22	°1966	°0469	°6576	°3490	°96725	°14174	°06241	°43510	120°697
23	-1°1917	-1°0581	-8°6349	+0°3507	0°97542	1°13256	0°06328	1°43524	120°764
24	°1867	°0688	°6106	°3525	°98362	°12330	°06416	°43539	120°821
25	°1814	°0792	°5844	°3543	°99187	°11396	°06505	°43554	120°869
26	°1760	°0892	°5563	°3561	1°00015	°10454	°06595	°43570	120°905
27	°1704	°0988	°5260	°3580	°00846	°09503	°06686	°43586	120°931
28	-1°1645	-1°1081	-8°4929	+0°3599	1°01678	1°08544	0°06777	1°43601	120°948
29	°1585	°1171	°4567	°3618	°02512	°07578	°06870	°43617	120°953
30	°1523	°1257	°4166	°3637	°03347	°06604	°06963	°43633	120°948
May 1	°1458	°1341	°3720	°3656	°04180	°05623	°07057	°43649	120°933
2	°1391	°1422	°3216	°3675	°05013	°04635	°07152	°43665	120°907
3	-1°1322	-1°1500	-8°2639	+0°3694	1°05845	1°03640	0°07248	1°43681	120°872
4	°1251	°1576	°1967	°3713	°06676	°02640	°07345	°43698	120°826
5	°1177	°1649	°1163	°3732	°07504	°01634	°07442	°43714	120°770
6	°1101	°1719	8°0162	°3751	°08331	1°00621	°07540	°43730	120°704
7	°1022	°1787	7°8842	°3769	°09153	0°99603	°07640	°43746	120°627
8	-1°0941	-1°1853	-7°6911	+0°3788	1°09973	0°98581	0°07740	1°43762	120°540
9	°0856	°1917	-7°3284	°3806	°10790	°97555	°07841	°43778	120°443
10	°0769	°1978	+6°8384	°3824	°11601	°96525	°07943	°43794	120°337
11	°0679	°2037	7°5567	°3842	°12409	°95492	°08046	°43810	120°219
12	°0586	°2095	7°8062	°3859	°13212	°94458	°08149	°43825	120°092
13	-1°0489	-1°2150	+7°9680	+0°3876	1°14011	0°93422	0°08253	1°43840	119°956
14	°0390	°2203	8°0867	°3893	°14804	°92386	°08358	°43855	119°820
15	°0286	°2255	°1807	°3909	°15592	°91349	°08464	°43869	119°654
16	°0179	°2304	°2586	°3924	°16374	°90312	°08570	°43883	119°489
17	1°0068	°2352	°3251	°3939	°17153	°89277	°08677	°43897	119°314
18	-0°9952	-1°2398	+8°3833	+0°3954	1°17925	0°88246	0°08784	1°43910	119°129

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Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
May 19	-0°9833	-1°2443	+8°4349	+0°3968	1°18690	0°87217	0°08892	1°43923	118°934
20	°9708	°2486	°4814	°3982	°19450	°86199	°09001	°43935	118°730
21	°9579	°2527	°5238	°3995	°20205	°85177	°09110	°43947	118°517
22	°9445	°2566	°5625	°4007	°20952	°84166	°09220	°43958	118°295
23	°9305	°2604	°5985	°4019	°21693	°83165	°09330	°43969	118°063
24	-0°9159	-1°2640	+8°6319	+0°4030	1°22428	0°82175	0°09441	1°43979	117°822
25	°9007	°2675	°6631	°4040	°23155	°81195	°09553	°43989	117°572
26	°8849	°2708	°6925	°4050	°23878	°80230	°09665	°43998	117°313
27	°8683	°2740	°7202	°4059	°24592	°79278	°09778	°44006	117°045
28	°8509	°2771	°7463	°4067	°25301	°78344	°09891	°44013	116°769
29	-0°8327	-1°2800	+8°7712	+0°4074	1°26002	0°77428	0°10004	1°44020	116°484
30	°8135	°2827	°7948	°4081	°26697	°76535	°10118	°44026	116°190
31	°7934	°2853	°8174	°4087	°27384	°75661	°10232	°44032	115°888
June 1	°7721	°2878	°8389	°4092	°28064	°74813	°10346	°44037	115°578
2	°7496	°2902	°8594	°4096	°28738	°73988	°10460	°44041	115°260
3	-0°7258	-1°2924	+8°8792	+0°4099	1°29405	0°73194	0°10575	1°44043	114°933
4	°7005	°2945	°8982	°4101	°30064	°72430	°10690	°44045	114°599
5	°6735	°2964	°9165	°4103	°30717	°71697	°10805	°44046	114°257
6	°6446	°2982	°9340	°4103	°31362	°70999	°10921	°44047	113°906
7	°6135	°2999	°9510	°4102	°32000	°70338	°11037	°44047	113°548
8	-0°5799	-1°3015	+8°9674	+0°4101	1°32631	0°69717	0°11153	1°44046	113°182
9	°5434	°3029	°9832	°4099	°33255	°69133	°11268	°44043	112°809
10	°5034	°3042	°9986	°4096	°33872	°68593	°11384	°44040	112°428
11	°4591	°3054	°9°134	°4092	°34482	°68100	°11500	°44036	112°040
12	°4098	°3065	°0279	°4086	°35085	°67646	°11615	°44032	111°645
13	-0°3540	-1°3074	+9°0419	+0°4080	1°35681	0°67222	0°11731	1°44026	111°244
14	°2888	°3082	°0554	°4073	°36270	°66892	°11846	°44019	110°836
15	°2143	°3089	°0686	°4064	°36851	°66585	°11962	°44011	110°420
16	°1227	°3095	°0814	°4055	°37426	°66333	°12077	°44003	109°997
17	0°0064	°3100	°0938	°4045	°37995	°66134	°12192	°43994	109°568
18	-9°8468	-1°3103	+9°1059	+0°4033	1°38556	0°65986	0°12307	1°43983	109°132
19	9°5917	°3105	°1177	°4021	°39110	°65888	°12422	°43971	108°691
20	-8°8942	°3106	°1292	°4007	°39658	°65848	°12537	°43958	108°244
21	+9°3690	°3106	°1404	°3992	°40198	°65861	°12651	°43945	107°789
22	9°7372	°3104	°1513	°3976	°40732	°65928	°12764	°43930	107°329
23	+9°9335	-1°3101	+9°1619	+0°3959	1°41260	0°66049	0°12877	1°43915	106°863
24	0°0681	°3097	°1723	°3941	°41780	°66227	°12990	°43899	106°392
25	°1707	°3092	°1824	°3922	°42294	°66453	°13103	°43882	105°915
26	°2534	°3086	°1923	°3901	°42801	°66730	°13215	°43864	105°432
27	°3228	°3078	°2019	°3880	°43302	°67061	°13328	°43844	104°944
28	+0°3825	-1°3070	+9°2114	+0°3857	1°43795	0°67437	0°13440	1°43824	104°451
29	°4349	°3060	°2206	°3833	°44283	°67863	°13551	°43803	103°953
30	°4815	°3049	°2296	°3808	°44763	°68334	°13661	°43780	103°451
July 1	°5235	°3036	°2384	°3782	°45237	°68854	°13771	°43757	102°943
2	°5617	°3022	°2469	°3754	°45705	°69414	°13880	°43733	102°430
3	+0°5967	-1°3007	+9°2553	+0°3725	1°46166	0°70012	0°13989	1°43708	101°913

APPARENT PLACES OF STARS, 1889. 297

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
July 4	+0°6289	-1°2991	+9°2635	+0°3695	1°46620	0°70653	0°14097	1°43682	101°392
5	°6588	°2974	°2716	°3664	°47068	°71331	°14204	°43656	100°867
6	°6867	°2955	°2794	°3632	°47510	°72045	°14311	°43628	100°337
7	°7127	°2935	°2871	°3598	°47944	°72788	°14417	°43600	99°804
8	°7372	°2914	°2946	°3563	°48373	°73563	°14522	°43571	99°267
9	+0°7603	-1°2891	+9°3020	+0°3527	1°48796	0°74370	0°14626	1°43541	98°726
10	°7821	°2867	°3092	°3489	°49212	°75198	°14730	°43510	98°181
11	°8027	°2842	°3162	°3451	°49622	°76057	°14833	°43478	97°633
12	°8223	°2815	°3232	°3411	°50026	°76934	°14936	°43446	97°081
13	°8409	°2787	°3299	°3369	°50423	°77835	°15037	°43413	96°527
14	+0°8586	-1°2757	+9°3365	+0°3327	1°50815	0°78756	0°15137	1°43379	95°970
15	°8756	°2727	°3430	°3283	°51200	°79690	°15237	°43344	95°410
16	°8918	°2695	°3493	°3237	°51579	°80642	°15336	°43309	94°848
17	°9072	°2661	°3555	°3191	°51952	°81609	°15434	°43273	94°283
18	°9221	°2625	°3616	°3143	°52319	°82589	°15532	°43236	93°714
19	+0°9363	-1°2588	+9°3676	+0°3094	1°52681	0°83576	0°15628	1°43199	93°142
20	°9500	°2550	°3734	°3043	°53036	°84575	°15724	°43161	92°568
21	°9631	°2510	°3792	°2991	°53385	°85582	°15819	°43122	91°992
22	°9758	°2469	°3848	°2938	°53728	°86596	°15913	°43083	91°415
23	°9879	°2426	°3903	°2883	°54066	°87615	°16006	°43043	90°836
24	+0°9997	-1°2381	+9°3956	+0°2827	1°54397	0°88637	0°16097	1°43003	90°255
25	1°0110	°2335	°4009	°2770	°54723	°89664	°16188	°42962	89°672
26	°0219	°2286	°4061	°2711	°55043	°90693	°16278	°42921	89°088
27	°0324	°2236	°4111	°2651	°55357	°91723	°16367	°42880	88°502
28	°0425	°2185	°4161	°2590	°55665	°92754	°16455	°42839	87°915
29	+1°0523	-1°2131	+9°4209	+0°2527	1°55968	0°93784	0°16542	1°42797	87°327
30	°0618	°2075	°4257	°2463	°56264	°94812	°16628	°42754	86°738
31	°0710	°2018	°4304	°2398	°56555	°95839	°16713	°42711	86°148
Aug. 1	°0798	°1958	°4349	°2331	°56840	°96862	°16797	°42668	85°558
2	°0884	°1897	°4394	°2263	°57120	°97882	°16880	°42625	84°967
3	+1°0966	-1°1833	+9°4438	+0°2194	1°57394	0°98897	0°16962	1°42581	84°377
4	°1046	°1767	°4481	°2123	°57662	0°99910	°17043	°42537	83°786
5	°1124	°1699	°4523	°2051	°57924	1°00917	°17124	°42494	83°194
6	°1198	°1628	°4565	°1977	°58181	°01917	°17203	°42450	82°602
7	°1271	°1555	°4605	°1903	°58432	°02914	°17282	°42406	82°010
8	+1°1341	-1°1480	+9°4645	+0°1827	1°58678	1°03904	0°17360	1°42362	81°418
9	°1409	°1402	°4684	°1750	°58918	°04886	°17436	°42318	80°828
10	°1474	°1321	°4722	°1671	°59152	°05862	°17511	°42274	80°239
11	°1537	°1237	°4760	°1592	°59381	°06831	°17586	°42230	79°649
12	°1599	°1151	°4797	°1511	°59604	°07793	°17660	°42187	79°060
13	+1°1658	-1°1061	+9°4833	+0°1429	1°59822	1°08748	0°17733	1°42144	78°471
14	°1715	°0969	°4868	°1345	°60035	°09695	°17804	°42100	77°883
15	°1770	°0873	°4903	°1261	°60242	°10633	°17875	°42057	77°296
16	°1824	°0773	°4937	°1175	°60443	°11564	°17945	°42014	76°711
17	°1876	°0670	°4970	°1088	°60639	°12488	°18015	°41971	76°127
18	+1°1925	-1°0563	+9°5003	+0°1001	1°60830	1°13402	0°18083	1°41929	75°545

298 APPARENT PLACES OF STARS, 1889.

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
Aug. 19	+1.1973	-1.0452	+9.5035	+0.0912	1.61015	1.14308	0.18150	1.41886	74.964
20	.2020	.0337	.5067	.0822	.61195	.15206	.18217	.41844	74.385
21	.2064	.0218	.5098	.0732	.61369	.16095	.18283	.41803	73.808
22	.2107	1.0093	.5129	.0640	.61538	.16975	.18348	.41761	73.233
23	.2149	0.9964	.5159	.0548	.61701	.17847	.18412	.41721	72.659
24	+1.2189	-0.9830	+9.5188	+0.0455	1.61859	1.18710	0.18476	1.41681	72.088
25	.2227	.9689	.5217	.0361	.62012	.19564	.18539	.41642	71.519
26	.2263	.9543	.5245	.0267	.62159	.20409	.18600	.41603	70.952
27	.2299	.9390	.5273	.0172	.62301	.21245	.18661	.41564	70.388
28	.2333	.9231	.5301	0.0077	.62438	.22072	.18721	.41526	69.827
29	+1.2365	-0.9064	+9.5328	+9.9981	1.62569	1.22890	0.18781	1.41490	69.268
30	.2395	.8888	.5355	.9885	.62694	.23700	.18840	.41454	68.712
31	.2425	.8705	.5381	.9789	.62815	.24500	.18898	.41418	68.159
Sept. 1	.2453	.8511	.5407	.9693	.62930	.25291	.18956	.41383	67.610
2	.2479	.8307	.5432	.9597	.63039	.26073	.19014	.41349	67.064
3	+1.2504	-0.8092	+9.5457	+9.9502	1.63144	1.26846	0.19071	1.41316	66.521
4	.2528	.7864	.5482	.9406	.63243	.27611	.19127	.41283	65.982
5	.2550	.7622	.5506	.9311	.63336	.28366	.19183	.41251	65.446
6	.2571	.7365	.5530	.9217	.63424	.29112	.19238	.41220	64.914
7	.2591	.7090	.5554	.9123	.63507	.29850	.19292	.41191	64.387
8	+1.2609	-0.6794	+9.5578	+9.9031	1.63584	1.30578	0.19346	1.41162	63.863
9	.2626	.6476	.5601	.8939	.63656	.31298	.19400	.41134	63.343
10	.2642	.6130	.5624	.8849	.63723	.32010	.19453	.41107	62.827
11	.2657	.5754	.5646	.8760	.63784	.32712	.19506	.41081	62.316
12	.2670	.5340	.5669	.8673	.63840	.33406	.19558	.41056	61.809
13	+1.2682	-0.4880	+9.5691	+9.8587	1.63891	1.34091	0.19610	1.41031	61.307
14	.2692	.4365	.5713	.8504	.63936	.34768	.19662	.41008	60.809
15	.2702	.3778	.5734	.8422	.63976	.35437	.19714	.40986	60.316
16	.2710	.3097	.5756	.8343	.64010	.36097	.19765	.40964	59.827
17	.2716	.2287	.5777	.8267	.64039	.36749	.19816	.40944	59.343
18	+1.2722	-0.2288	+9.5799	+9.8193	1.64063	1.37392	0.19867	.40925	58.864
19	.2726	.9.9986	.5820	.8123	.64081	.38027	.19918	.40907	58.390
20	.2729	.9.8115	.5840	.8055	.64094	.38654	.19968	.40890	57.922
21	.2731	-9.4749	.5861	.7991	.64101	.39273	.20018	.40874	57.459
22	.2731	+8.7088	.5882	.7931	.64103	.39883	.20069	.40859	57.002
23	+1.2730	+9.6032	+9.5902	+9.7874	1.64100	1.40483	0.20119	1.40846	56.551
24	.2728	.9.8756	.5923	.7821	.64091	.41079	.20169	.40834	56.105
25	.2725	0.0417	.5943	.7772	.64076	.41665	.20220	.40822	55.664
26	.2720	.1616	.5964	.7727	.64056	.42244	.20270	.40812	55.229
27	.2714	.2553	.5984	.7687	.64031	.42814	.20320	.40803	54.800
28	+1.2707	+0.3323	+9.6004	+9.7651	1.64000	1.43376	0.20371	1.40794	54.378
29	.2699	.3977	.6024	.7619	.63964	.43931	.20422	.40786	53.962
30	.2689	.4543	.6045	.7592	.63922	.44477	.20473	.40780	53.551
Oct. 1	.2678	.5043	.6065	.7570	.63874	.45015	.20523	.40776	53.149
2	.2665	.5491	.6085	.7552	.63821	.45546	.20574	.40772	52.753
3	+1.2651	+0.5895	+9.6105	+9.7538	1.63763	1.46069	0.20625	1.40769	52.363

APPARENT PLACES OF STARS, 1889. 299

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
Oct. 4	+1°2636	+0°6265	+9°6125	+9°7530	1°63698	1°46585	0°20676	1°40767	51°980
5	°2620	°6604	°6146	°7526	°63629	°47094	°20728	°40766	51°603
6	°2602	°6918	°6166	°7526	°63553	°47593	°20780	°40766	51°233
7	°2583	°7209	°6187	°7531	°63473	°48085	°20833	°40767	50°870
8	°2562	°7481	°6207	°7541	°63386	°48571	°20886	°40769	50°515
9	+1°2540	+0°7736	+9°6227	+9°7555	1°63294	1°49048	0°20939	1°40772	50°167
10	°2517	°7976	°6248	°7572	°63196	°49519	°20992	°40776	49°826
11	°2492	°8202	°6269	°7594	°63092	°49982	°21045	°40781	49°493
12	°2465	°8416	°6289	°7620	°62983	°50438	°21099	°40787	49°167
13	°2437	°8618	°6310	°7649	°62868	°50886	°21154	°40793	48°849
14	+1°2408	+0°8811	+9°6331	+9°7682	1°62747	1°51328	0°21209	1°40800	48°538
15	°2377	°8994	°6352	°7718	°62620	°51762	°21265	°40808	48°235
16	°2345	°9168	°6374	°7757	°62488	°52189	°21322	°40818	47°939
17	°2311	°9335	°6395	°7799	°62350	°52609	°21378	°40828	47°653
18	°2275	°9494	°6416	°7844	°62206	°53021	°21435	°40839	47°375
19	+1°2237	+0°9647	+9°6438	+9°7892	1°62054	1°53427	0°21493	1°40850	47°104
20	°2198	°9793	°6459	°7922	°61900	°53826	°21551	°40862	46°840
21	°2158	0°9934	°6481	°7994	°61738	°54218	°21610	°40875	46°584
22	°2116	1°0068	°6503	°8047	°61571	°54603	°21669	°40888	46°337
23	°2072	°0198	°6525	°8102	°61397	°54981	°21729	°40901	46°099
24	+1°2026	+1°0322	+9°6548	+9°8159	1°61217	1°55332	0°21790	1°40915	45°870
25	°1978	°0442	°6570	°8218	°61032	°55716	°21852	°40930	45°649
26	°1928	°0557	°6593	°8277	°60840	°56073	°21914	°40946	45°437
27	°1876	°0668	°6615	°8337	°60642	°56424	°21977	°40962	45°234
28	°1823	°0776	°6638	°8398	°60439	°56767	°22040	°40979	45°039
29	+1°1767	+1°0879	+9°6661	+9°8459	1°60229	1°57104	0°22104	1°40996	44°853
30	°1709	°0979	°6684	°8521	°60013	°57434	°22169	°41013	44°676
31	°1649	°1075	°6708	°8583	°59791	°57758	°22234	°41030	44°508
Nov. 1	°1587	°1167	°6731	°8645	°59563	°58074	°22300	°41048	44°350
2	°1523	°1257	°6755	°8706	°59328	°58384	°22367	°41066	44°201
3	+1°1456	+1°1344	+9°6778	+9°8768	1°59088	1°58687	0°22434	1°41083	44°060
4	°1387	°1427	°6802	°8829	°58841	°58984	°22502	°41101	43°928
5	°1315	°1508	°6826	°8889	°58588	°59274	°22571	°41119	43°806
6	°1241	°1586	°6851	°8950	°58330	°59558	°22640	°41137	43°693
7	°1164	°1661	°6875	°9009	°58063	°59835	°22710	°41155	43°590
8	+1°1084	+1°1734	+9°6899	+9°9067	1°57790	1°60105	0°22781	1°41173	43°497
9	°1002	°1804	°6924	°9125	°57512	°60369	°22853	°41191	43°414
10	°0916	°1872	°6949	°9181	°57227	°60626	°22925	°41209	43°340
11	°0827	°1938	°6974	°9237	°56935	°60877	°22998	°41227	43°275
12	°0735	°2001	°6999	°9291	°56636	°61122	°23072	°41245	43°219
13	+1°0640	+1°2062	+9°7024	+9°9343	1°56333	1°61360	0°23146	1°41263	43°173
14	°0541	°2121	°7049	°9395	°56021	°61592	°23221	°41280	43°137
15	°0438	°2178	°7075	°9445	°55704	°61817	°23296	°41297	43°110
16	°0331	°2233	°7100	°9493	°55379	°62036	°23372	°41314	43°094
17	°0220	°2286	°7126	°9540	°55048	°62248	°23449	°41330	43°088
18	+1°0105	+1°2336	+9°7152	+9°9585	1°54710	1°62454	0°23527	1°41345	43°091

50 APPARENT PLACES OF STARS, 1889.

Mean Mid- night.	BESSEL'S DAY NUMBERS.				AIRY'S DAY NUMBERS.				
	Log. A.	Log. B.	Log. C.	Log. D.	Log. E.	Log. F.	Log. G.	Log. H.	L.
Nov. 19	+0° 9986	+1° 2385	+9° 7177	+9° 9628	1° 54366	1° 62654	0° 23605	1° 41360	43° 104
20	'9861	'2433	'7203	'9669	'54014	'62848	'23684	'41375	43° 126
21	'9731	'2478	'7229	'9709	'53655	'63035	'23763	'41389	43° 159
22	'9596	'2521	'7255	'9747	'53290	'63216	'23843	'41403	43° 202
23	'9455	'2563	'7281	'9783	'52918	'63390	'23923	'41416	43° 255
24	+0° 9308	+1° 2603	+9° 7308	+9° 9817	1° 52539	1° 63558	0° 24004	1° 41428	43° 318
25	'9154	'2642	'7334	'9848	'52153	'63721	'24085	'41440	43° 391
26	'8993	'2678	'7360	'9878	'51760	'63876	'24167	'41451	43° 473
27	'8825	'2713	'7386	'9905	'51360	'64035	'24249	'41461	43° 565
28	'8648	'2747	'7413	'9931	'50953	'64169	'24332	'41471	43° 666
29	+0° 8463	+1° 2779	+9° 7439	+9° 9954	1° 50540	1° 64305	0° 24415	1° 41480	43° 777
30	'8267	'2809	'7465	'9975	'50119	'64436	'24498	'41488	43° 899
Dec. 1	'8061	'2837	'7492	9° 9993	'49690	'64561	'24582	'41495	44° 030
2	'7843	'2864	'7518	0° 0009	'49255	'64679	'24666	'41501	44° 171
3	'7612	'2890	'7544	'0023	'48812	'64791	'24751	'41506	44° 323
4	+0° 7366	+1° 2914	+9° 7571	+0° 0034	1° 48363	1° 64896	0° 24836	1° 41510	44° 484
5	'7104	'2937	'7597	'0043	'47905	'64996	'24921	'41513	44° 655
6	'6824	'2958	'7623	'0049	'47441	'65090	'25006	'41516	44° 835
7	'6524	'2978	'7649	'0053	'46969	'65177	'25092	'41518	45° 025
8	'6199	'2996	'7676	'0054	'46490	'65258	'25178	'41519	45° 224
9	+0° 5846	+1° 3013	+9° 7702	+0° 0052	1° 46003	1° 65332	0° 25263	1° 41518	45° 434
10	'5461	'3028	'7728	'0048	'45509	'65401	'25349	'41516	45° 653
11	'5036	'3042	'7754	'0041	'45007	'65463	'25435	'41513	45° 881
12	'4564	'3055	'7780	'0031	'44498	'65520	'25522	'41509	46° 118
13	'4032	'3066	'7806	'0018	'43981	'65570	'25608	'41504	46° 365
14	+0° 3424	+1° 3076	+9° 7832	+0° 0003	1° 43457	1° 65614	0° 25694	1° 41498	46° 621
15	'2716	'3084	'7857	9° 9984	'42925	'65651	'25781	'41491	46° 887
16	'1866	'3091	'7883	'9962	'42385	'65683	'25867	'41483	47° 161
17	0° 0808	'3097	'7908	'9937	'41838	'65708	'25953	'41474	47° 444
18	9° 9402	'3101	'7934	'9909	'41282	'65728	'26040	'41463	47° 737
19	+9° 7310	+1° 3104	+9° 7959	+9° 9877	1° 40719	1° 65741	0° 26126	1° 41451	48° 040
20	+9° 3111	'3106	'7984	'9842	'40148	'65747	'26212	'41438	48° 351
21	-9° 1104	'3106	'8009	'9804	'39570	'65746	'26298	'41424	48° 670
22	9° 6652	'3105	'8034	'9763	'38983	'65743	'26384	'41408	48° 998
23	9° 9010	'3102	'8058	'9717	'38389	'65731	'26470	'41391	49° 334
24	-0° 0528	+1° 3098	+9° 8083	+9° 9668	1° 37786	1° 65713	0° 26555	1° 41374	49° 677
25	'1650	'3093	'8107	'9615	'37176	'65689	'26640	'41355	50° 029
26	'2540	'3086	'8132	'9558	'36559	'65659	'26725	'41335	50° 389
27	'3275	'3078	'8156	'9497	'35935	'65623	'26810	'41314	50° 757
28	'3904	'3068	'8180	'9432	'35300	'65580	'26894	'41292	51° 134
29	-0° 4453	+1° 3057	+9° 8203	+9° 9362	1° 34658	1° 65531	0° 26978	1° 41269	51° 519
30	'4938	'3045	'8227	'9288	'34009	'65476	'27062	'41244	51° 912
31	'5374	'3031	'8250	'9209	'33352	'65415	'27145	'41218	52° 311
32	-0° 5768	+1° 3016	+9° 8273	+9° 9126	1° 32688	1° 65348	0° 27228	1° 41191	52° 717

APPARENT PLACES OF STARS, 1889. 30.

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .	
Jan.	1	-14.08	+0.8600	147 44	+1.3091	349 6	-0.2231
	2	13.92	0.8560	147 33	1.3089	348 10	0.2584
	3	13.76	0.8519	147 22	1.3086	347 13	0.2909
	4	13.61	0.8478	147. 12	1.3083	346 16	0.3210
	5	13.45	0.8437	147 1	1.3080	345 19	0.3490
	6	-13.30	+0.8396	146 50	+1.3076	344 22	-0.3752
	7	13.14	0.8353	146 40	1.3073	343 26	0.3998
	8	12.98	0.8310	146 30	1.3069	342 29	0.4229
	9	12.83	0.8267	146 20	1.3065	341 31	0.4447
	10	12.68	0.8224	146 10	1.3061	340 34	0.4653
	11	-12.53	+0.8180	146 0	+1.3057	339 37	-0.4849
	12	12.38	0.8136	145 50	1.3053	338 40	0.5035
	13	12.23	0.8092	145 40	1.3048	337 42	0.5212
	14	12.08	0.8047	145 31	1.3043	336 45	0.5380
	15	11.93	0.8002	145 22	1.3038	335 47	0.5541
	16	-11.79	+0.7956	145 13	+1.3033	334 49	-0.5695
	17	11.64	0.7910	145 4	1.3028	333 51	0.5843
	18	11.50	0.7864	144 55	1.3023	332 53	0.5984
	19	11.36	0.7818	144 46	1.3017	331 55	0.6119
	20	11.22	0.7771	144 38	1.3012	330 56	0.6249
	21	-11.08	+0.7724	144 30	+1.3006	329 57	-0.6374
	22	10.94	0.7677	144 21	1.3000	328 59	0.6494
	23	10.80	0.7630	144 13	1.2994	328 0	0.6609
	24	10.67	0.7582	144 5	1.2988	327 1	0.6720
	25	10.53	0.7534	143 58	1.2982	326 2	0.6827
	26	-10.40	+0.7486	143 50	+1.2975	325 3	-0.6930
	27	10.27	0.7437	143 43	1.2969	324 3	0.7029
	28	10.14	0.7388	143 35	1.2963	323 4	0.7125
	29	10.01	0.7340	143 28	1.2957	322 4	0.7218
	30	9.88	0.7291	143 21	1.2950	321 4	0.7306
Feb.	31	-9.75	+0.7242	143 14	+1.2944	320 4	-0.7392
	1	9.63	0.7193	143 7	1.2937	319 3	0.7474
	2	9.51	0.7143	143 1	1.2931	318 3	0.7554
	3	9.39	0.7094	142 54	1.2924	317 2	0.7631
	4	9.27	0.7044	142 48	1.2917	316 1	0.7706
	5	-9.15	+0.6994	142 42	+1.2911	315 0	-0.7778
	6	9.03	0.6944	142 35	1.2904	313 59	0.7847
	7	8.91	0.6894	142 29	1.2897	312 58	0.7914
	8	8.80	0.6844	142 23	1.2891	311 57	0.7978
	9	8.69	0.6794	142 17	1.2884	310 56	0.8040
	10	-8.58	+0.6743	142 11	+1.2878	309 54	-0.8100
	11	8.47	0.6693	142 5	1.2871	308 52	0.8158
	12	8.36	0.6643	141 59	1.2865	307 50	0.8213
	13	8.25	0.6593	141 52	1.2858	306 48	0.8267
	14	8.14	0.6543	141 46	1.2852	305 46	0.8318
15	-8.04	+0.6492	141 40	+1.2846	304 43	-0.8368	

02 APPARENT PLACES OF STARS, 1889.

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight		<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .
Feb.	16	— 7° 93	+0° 6442	141 34	+1° 2840	303 41	—0° 8415
	17	7° 83	0° 6392	141 28	1° 2834	302 38	0° 8461
	18	7° 73	0° 6342	141 21	1° 2828	301 35	0° 8505
	19	7° 63	0° 6292	141 15	1° 2822	300 31	0° 8547
	20	7° 53	0° 6242	141 8	1° 2816	299 28	0° 8588
	21	— 7° 43	+0° 6192	141 2	+1° 2811	298 25	—0° 8626
	22	7° 34	0° 6143	140 55	1° 2805	297 21	0° 8663
	23	7° 24	0° 6093	140 48	1° 2800	296 18	0° 8699
	24	7° 15	0° 6044	140 40	1° 2795	295 14	0° 8732
	25	7° 05	0° 5994	140 33	1° 2790	294 10	0° 8764
	26	— 6° 96	+0° 5945	140 25	+1° 2785	293 6	—0° 8795
	27	6° 87	0° 5896	140 17	1° 2780	292 2	0° 8824
	28	6° 78	0° 5847	140 9	1° 2776	290 58	0° 8851
Mar.	1	6° 69	0° 5799	140 0	1° 2772	289 53	0° 8877
	2	6° 60	0° 5751	139 51	1° 2768	288 48	0° 8902
	3	— 6° 51	+0° 5703	139 41	+1° 2764	287 44	—0° 8925
	4	6° 43	0° 5655	139 31	1° 2760	286 40	0° 8946
	5	6° 34	0° 5607	139 21	1° 2756	285 35	0° 8966
	6	6° 25	0° 5560	139 10	1° 2753	284 30	0° 8985
	7	6° 17	0° 5512	138 58	1° 2750	283 26	0° 9003
	8	— 6° 08	+0° 5465	138 46	+1° 2747	282 21	—0° 9019
	9	6° 00	0° 5419	138 34	1° 2745	281 16	0° 9033
	10	5° 92	0° 5373	138 21	1° 2742	280 11	0° 9046
	11	5° 83	0° 5327	138 7	1° 2740	279 6	0° 9058
	12	5° 75	0° 5281	137 53	1° 2738	278 1	0° 9068
	13	— 5° 67	+0° 5235	137 38	+1° 2736	276 56	—0° 9077
	14	5° 58	0° 5189	137 22	1° 2735	275 51	0° 9085
	15	5° 50	0° 5144	137 5	1° 2734	274 46	0° 9092
	16	5° 42	0° 5100	136 48	1° 2733	273 41	0° 9097
	17	5° 34	0° 5056	136 29	1° 2732	272 36	0° 9100
	18	— 5° 26	+0° 5013	136 9	+1° 2732	271 31	—0° 9103
	19	5° 17	0° 4969	135 49	1° 2731	270 26	0° 9104
	20	5° 09	0° 4925	135 29	1° 2731	269 22	0° 9104
	21	5° 01	0° 4881	135 7	1° 2732	268 17	0° 9104
	22	4° 93	0° 4839	134 45	1° 2732	267 12	0° 9101
	23	— 4° 85	+0° 4797	134 21	+1° 2733	266 7	—0° 9096
	24	4° 76	0° 4755	133 55	1° 2734	265 2	0° 9091
	25	4° 68	0° 4713	133 29	1° 2735	263 57	0° 9084
	26	4° 60	0° 4673	133 2	1° 2737	262 53	0° 9076
	27	4° 52	0° 4632	132 34	1° 2738	261 49	0° 9067
April	28	— 4° 43	+0° 4592	132 4	+1° 2740	260 44	—0° 9056
	29	4° 35	0° 4553	131 33	1° 2743	259 40	0° 9044
	30	4° 26	0° 4514	131 1	1° 2745	258 36	0° 9031
	31	4° 18	0° 4475	130 28	1° 2748	257 32	0° 9017
	1	4° 09	0° 4437	129 53	1° 2750	256 28	0° 9002
	2	— 4° 01	+0° 4399	129 17	+1° 2753	255 24	—0° 8984

APPARENT PLACES OF STARS, 1889. 30

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .	
April	3	— 3 ^h .92	+0 ^h .4362	128 40	+1 ^h .2757	254 20	—0 ^h .8965
	4	3 ^h .83	0 ^h .4326	128 1	1 ^h .2760	253 17	0 ^h .8945
	5	3 ^h .74	0 ^h .4290	127 21	1 ^h .2764	252 13	0 ^h .8924
	6	3 ^h .65	0 ^h .4255	126 39	1 ^h .2768	251 10	0 ^h .8901
	7	3 ^h .56	0 ^h .4221	125 56	1 ^h .2772	250 7	0 ^h .8877
	8	— 3 ^h .47	+0 ^h .4187	125 12	+1 ^h .2776	249 4	—0 ^h .8852
	9	3 ^h .38	0 ^h .4154	124 26	1 ^h .2780	248 1	0 ^h .8825
	10	3 ^h .29	0 ^h .4122	123 38	1 ^h .2785	246 58	0 ^h .8797
	11	3 ^h .20	0 ^h .4091	122 49	1 ^h .2789	245 56	0 ^h .8767
	12	3 ^h .10	0 ^h .4061	121 59	1 ^h .2794	244 54	0 ^h .8736
	13	— 3 ^h .01	+0 ^h .4032	121 7	+1 ^h .2799	243 52	—0 ^h .8704
	14	2 ^h .91	0 ^h .4004	120 13	1 ^h .2804	242 50	0 ^h .8670
	15	2 ^h .81	0 ^h .3977	119 18	1 ^h .2810	241 48	0 ^h .8634
	16	2 ^h .71	0 ^h .3951	118 22	1 ^h .2815	240 47	0 ^h .8597
	17	2 ^h .61	0 ^h .3927	117 24	1 ^h .2821	239 45	0 ^h .8558
	18	— 2 ^h .51	+0 ^h .3904	116 25	+1 ^h .2826	238 44	—0 ^h .8517
	19	2 ^h .41	0 ^h .3882	115 24	1 ^h .2832	237 43	0 ^h .8475
	20	2 ^h .31	0 ^h .3861	114 22	1 ^h .2838	236 42	0 ^h .8431
	21	2 ^h .20	0 ^h .3842	113 18	1 ^h .2844	235 41	0 ^h .8386
	22	2 ^h .10	0 ^h .3824	112 13	1 ^h .2849	234 41	0 ^h .8339
	23	— 1 ^h .99	+0 ^h .3809	111 6	+1 ^h .2855	233 41	—0 ^h .8290
	24	1 ^h .88	0 ^h .3794	109 58	1 ^h .2862	232 41	0 ^h .8240
	25	1 ^h .77	0 ^h .3781	108 49	1 ^h .2868	231 41	0 ^h .8187
	26	1 ^h .66	0 ^h .3769	107 39	1 ^h .2874	230 41	0 ^h .8133
27	1 ^h .55	0 ^h .3761	106 27	1 ^h .2880	229 42	0 ^h .8077	
28	— 1 ^h .43	+0 ^h .3754	105 14	+1 ^h .2887	228 43	—0 ^h .8018	
29	1 ^h .32	0 ^h .3749	104 1	1 ^h .2893	227 44	0 ^h .7958	
30	1 ^h .20	0 ^h .3745	102 46	1 ^h .2899	226 45	0 ^h .7896	
May	1	1 ^h .09	0 ^h .3744	101 30	1 ^h .2905	225 46	0 ^h .7831
	2	0 ^h .97	0 ^h .3744	100 14	1 ^h .2912	224 48	0 ^h .7764
	3	— 0 ^h .85	+0 ^h .3746	98 57	+1 ^h .2918	223 50	—0 ^h .7695
	4	0 ^h .73	0 ^h .3751	97 39	1 ^h .2925	222 52	0 ^h .7624
	5	0 ^h .60	0 ^h .3758	96 20	1 ^h .2931	221 54	0 ^h .7550
	6	0 ^h .48	0 ^h .3767	95 1	1 ^h .2937	220 57	0 ^h .7474
	7	0 ^h .35	0 ^h .3778	93 41	1 ^h .2943	219 59	0 ^h .7395
	8	— 0 ^h .23	+0 ^h .3792	92 21	+1 ^h .2950	219 2	—0 ^h .7314
	9	— 0 ^h .10	0 ^h .3807	91 0	1 ^h .2956	218 5	0 ^h .7229
	10	+ 0 ^h .03	0 ^h .3824	89 40	1 ^h .2962	217 8	0 ^h .7142
	11	0 ^h .17	0 ^h .3844	88 20	1 ^h .2968	216 11	0 ^h .7052
	12	0 ^h .30	0 ^h .3865	86 59	1 ^h .2974	215 14	0 ^h .6959
	13	+ 0 ^h .43	+0 ^h .3889	85 38	+1 ^h .2980	214 18	—0 ^h .6862
	14	0 ^h .56	0 ^h .3914	84 18	1 ^h .2986	213 22	0 ^h .6762
	15	0 ^h .70	0 ^h .3942	82 57	1 ^h .2991	212 26	0 ^h .6659
	16	0 ^h .84	0 ^h .3971	81 37	1 ^h .2997	211 30	0 ^h .6552
	17	0 ^h .97	0 ^h .4002	80 17	1 ^h .3003	210 35	0 ^h .6441
	18	1 ^h .10	0 ^h .4032	79 0	1 ^h .3009	209 39	0 ^h .6324

304 APPARENT PLACES OF STARS, 1889.

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .
May 19	+ 1 ^h 25	+0 ^h 4070	77 39	+1 ^h 3014	208 44	-0 ^h 6206
20	1 ^h 40	0 ^h 4106	76 21	1 ^h 3019	207 49	0 ^h 6081
21	1 ^h 54	0 ^h 4144	75 3	1 ^h 3024	206 54	0 ^h 5952
22	1 ^h 68	0 ^h 4184	73 46	1 ^h 3029	205 59	0 ^h 5818
23	1 ^h 83	0 ^h 4225	72 30	1 ^h 3034	205 4	0 ^h 5678
24	+ 1 ^h 97	+0 ^h 4267	71 14	+1 ^h 3039	204 10	-0 ^h 5532
25	2 ^h 12	0 ^h 4310	69 59	1 ^h 3044	203 15	0 ^h 5380
26	2 ^h 27	0 ^h 4355	68 45	1 ^h 3048	202 21	0 ^h 5221
27	2 ^h 42	0 ^h 4401	67 32	1 ^h 3052	201 27	0 ^h 5055
28	2 ^h 57	0 ^h 4449	66 20	1 ^h 3056	200 33	0 ^h 4882
29	+ 2 ^h 72	+0 ^h 4497	65 9	+1 ^h 3060	199 39	-0 ^h 4699
30	2 ^h 87	0 ^h 4546	63 58	1 ^h 3064	198 45	0 ^h 4508
31	3 ^h 03	0 ^h 4596	62 48	1 ^h 3068	197 51	0 ^h 4306
June 1	3 ^h 18	0 ^h 4646	61 39	1 ^h 3071	196 57	0 ^h 4094
2	3 ^h 33	0 ^h 4697	60 32	1 ^h 3075	196 4	0 ^h 3869
3	+ 3 ^h 49	+0 ^h 4749	59 25	+1 ^h 3078	195 11	-0 ^h 3631
4	3 ^h 65	0 ^h 4801	58 20	1 ^h 3081	194 18	0 ^h 3378
5	3 ^h 80	0 ^h 4854	57 15	1 ^h 3084	193 25	0 ^h 3108
6	3 ^h 96	0 ^h 4908	56 11	1 ^h 3087	192 31	0 ^h 2819
7	4 ^h 12	0 ^h 4961	55 9	1 ^h 3089	191 38	0 ^h 2508
8	+ 4 ^h 28	+0 ^h 5015	54 7	+1 ^h 3092	190 45	-0 ^h 2172
9	4 ^h 43	0 ^h 5070	53 6	1 ^h 3094	189 52	0 ^h 1807
10	4 ^h 59	0 ^h 5124	52 6	1 ^h 3096	188 59	0 ^h 1407
11	4 ^h 75	0 ^h 5179	51 7	1 ^h 3098	188 7	0 ^h 0964
12	4 ^h 91	0 ^h 5234	50 9	1 ^h 3100	187 14	0 ^h 0471
13	+ 5 ^h 08	+0 ^h 5289	49 12	+1 ^h 3101	186 21	-9 ^h 9912
14	5 ^h 24	0 ^h 5344	48 16	1 ^h 3102	185 29	9 ^h 9270
15	5 ^h 40	0 ^h 5399	47 21	1 ^h 3103	184 36	9 ^h 8516
16	5 ^h 56	0 ^h 5453	46 27	1 ^h 3104	183 43	9 ^h 7600
17	5 ^h 72	0 ^h 5508	45 34	1 ^h 3105	182 51	9 ^h 6436
18	+ 5 ^h 88	+0 ^h 5562	44 41	+1 ^h 3105	181 58	-9 ^h 4841
19	6 ^h 04	0 ^h 5617	43 49	1 ^h 3106	181 6	9 ^h 2290
20	6 ^h 21	0 ^h 5671	42 59	1 ^h 3106	180 13	-8 ^h 5315
21	6 ^h 37	0 ^h 5725	42 9	1 ^h 3106	179 21	+9 ^h 0063
22	6 ^h 53	0 ^h 5778	41 19	1 ^h 3106	178 28	9 ^h 3745
23	+ 6 ^h 69	+0 ^h 5832	40 31	+1 ^h 3105	177 36	+9 ^h 5708
24	6 ^h 85	0 ^h 5885	39 44	1 ^h 3105	176 43	9 ^h 7054
25	7 ^h 01	0 ^h 5938	38 57	1 ^h 3104	175 50	9 ^h 8079
26	7 ^h 18	0 ^h 5990	38 11	1 ^h 3103	174 58	9 ^h 8907
27	7 ^h 34	0 ^h 6042	37 26	1 ^h 3102	174 6	9 ^h 9601
28	+ 7 ^h 50	+0 ^h 6094	36 41	+1 ^h 3100	173 13	+0 ^h 0198
29	7 ^h 66	0 ^h 6146	35 57	1 ^h 3099	172 20	0 ^h 0722
30	7 ^h 82	0 ^h 6197	35 14	1 ^h 3097	171 28	0 ^h 1188
July 1	7 ^h 98	0 ^h 6247	34 32	1 ^h 3095	170 35	0 ^h 1608
2	8 ^h 14	0 ^h 6297	33 50	1 ^h 3093	169 42	0 ^h 1990
3	+ 8 ^h 30	+0 ^h 6347	33 9	+1 ^h 3090	168 49	+0 ^h 2340

APPARENT PLACES OF STARS, 1889. 30

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .		
July	4	+ 8.45	+0.6396	32 29	+1.3088	167 56	+0.2662	
	5	8.61	0.6445	31 49	1.3085	167 3	0.2961	
	6	8.77	0.6493	31 10	1.3083	166 10	0.3240	
	7	8.93	0.6541	30 31	1.3080	165 17	0.3500	
	8	9.08	0.6588	29 53	1.3077	164 24	0.3745	
	9	+ 9.24	+0.6635	29 16	+1.3073	163 31	+0.3976	
	10	9.39	0.6681	28 39	1.3070	162 38	0.4194	
	11	9.55	0.6727	28 3	1.3066	161 44	0.4400	
	12	9.70	0.6772	27 28	1.3062	160 51	0.4596	
	13	9.85	0.6817	26 53	1.3058	159 57	0.4782	
	14	+10.00	+0.6862	26 18	+1.3054	159 3	+0.4959	
	15	10.15	0.6906	25 44	1.3050	158 10	0.5129	
	16	10.30	0.6949	25 11	1.3046	157 16	0.5290	
	17	10.45	0.6992	24 38	1.3041	156 22	0.5445	
	18	10.60	0.7034	24 6	1.3037	155 27	0.5594	
	19	+10.74	+0.7076	23 34	+1.3032	154 33	+0.5736	
	20	10.89	0.7117	23 3	1.3027	153 39	0.5873	
	21	11.03	0.7158	22 32	1.3022	152 44	0.6004	
	22	11.18	0.7199	22 1	1.3017	151 49	0.6131	
	23	11.32	0.7239	21 31	1.3011	150 54	0.6252	
	24	+11.46	+0.7278	21 2	+1.3006	149 59	+0.6370	
	25	11.60	0.7317	20 33	1.3001	149 4	0.6483	
	26	11.74	0.7355	20 5	1.2995	148 9	0.6592	
	27	11.88	0.7392	19 37	1.2989	147 13	0.6697	
	28	12.01	0.7430	19 9	1.2984	146 18	0.6798	
	29	+12.15	+0.7467	18 42	+1.2978	145 23	+0.6896	
	30	12.28	0.7503	18 16	1.2972	144 27	0.6991	
	31	12.42	0.7539	17 50	1.2966	143 31	0.7083	
	Aug.	1	12.55	0.7575	17 24	1.2960	142 34	0.7171
		2	12.67	0.7610	16 59	1.2954	141 37	0.7256
		3	+12.80	+0.7644	16 34	+1.2948	140 41	+0.7339
4		12.93	0.7678	16 10	1.2942	139 44	0.7419	
5		13.06	0.7712	15 46	1.2935	138 47	0.7497	
6		13.19	0.7745	15 22	1.2929	137 50	0.7571	
7		13.31	0.7778	14 59	1.2923	136 52	0.7644	
8		+13.43	+0.7810	14 36	+1.2916	135 55	+0.7714	
9		13.55	0.7842	14 14	1.2910	134 57	0.7781	
10		13.67	0.7873	13 52	1.2904	133 59	0.7847	
11		13.79	0.7904	13 31	1.2898	133 1	0.7910	
12		13.91	0.7934	13 10	1.2891	132 3	0.7972	
13		+14.02	+0.7964	12 50	+1.2885	131 5	+0.8031	
14		14.14	0.7994	12 30	1.2879	130 6	0.8088	
15		14.25	0.8023	12 10	1.2873	129 7	0.8143	
16		14.36	0.8052	11 51	1.2867	128 8	0.8197	
17		14.47	0.8081	11 32	1.2861	127 9	0.8248	
18		+14.58	+0.8109	11 13	+1.2855	126 9	+0.8298	

66 APPARENT PLACES OF STARS, 1889.

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .
Aug. 19	+14 [°] 69	+0 [°] 8137	10 55	+1 [°] 2849	125 10	+0 [°] 8346
20	14 [°] 80	0 [°] 8164	10 38	1 [°] 2843	124 11	0 [°] 8393
21	14 [°] 91	0 [°] 8191	10 21	1 [°] 2837	123 10	0 [°] 8437
22	15 [°] 01	0 [°] 8218	10 4	1 [°] 2831	122 10	0 [°] 8480
23	15 [°] 12	0 [°] 8244	9 47	1 [°] 2825	121 10	0 [°] 8522
24	+15 [°] 22	+0 [°] 8270	9 31	+1 [°] 2820	120 9	+0 [°] 8561
25	15 [°] 32	0 [°] 8296	9 16	1 [°] 2814	119 8	0 [°] 8599
26	15 [°] 42	0 [°] 8321	9 0	1 [°] 2809	118 7	0 [°] 8636
27	15 [°] 52	0 [°] 8346	8 45	1 [°] 2804	117 6	0 [°] 8672
28	15 [°] 62	0 [°] 8371	8 31	1 [°] 2799	116 5	0 [°] 8705
29	+15 [°] 72	+0 [°] 8395	8 17	+1 [°] 2794	115 4	+0 [°] 8737
30	15 [°] 81	0 [°] 8420	8 3	1 [°] 2789	114 2	0 [°] 8768
31	15 [°] 91	0 [°] 8444	7 50	1 [°] 2785	113 0	0 [°] 8797
Sept. 1	16 [°] 00	0 [°] 8467	7 37	1 [°] 2780	111 58	0 [°] 8825
2	16 [°] 10	0 [°] 8491	7 25	1 [°] 2775	110 56	0 [°] 8852
3	+16 [°] 19	+0 [°] 8514	7 13	+1 [°] 2771	109 54	+0 [°] 8877
4	16 [°] 28	0 [°] 8537	7 1	1 [°] 2768	108 52	0 [°] 8901
5	16 [°] 38	0 [°] 8559	6 50	1 [°] 2764	107 49	0 [°] 8923
6	16 [°] 47	0 [°] 8582	6 39	1 [°] 2760	106 47	0 [°] 8944
7	16 [°] 56	0 [°] 8604	6 28	1 [°] 2757	105 45	0 [°] 8964
8	+16 [°] 65	+0 [°] 8626	6 18	+1 [°] 2754	104 42	+0 [°] 8982
9	16 [°] 73	0 [°] 8648	6 8	1 [°] 2751	103 38	0 [°] 8999
10	16 [°] 82	0 [°] 8669	5 59	1 [°] 2748	102 35	0 [°] 9015
11	16 [°] 91	0 [°] 8691	5 50	1 [°] 2745	101 32	0 [°] 9029
12	17 [°] 00	0 [°] 8712	5 41	1 [°] 2743	100 29	0 [°] 9043
13	+17 [°] 09	+0 [°] 8733	5 33	+1 [°] 2741	99 25	+0 [°] 9055
14	17 [°] 17	0 [°] 8754	5 25	1 [°] 2739	98 22	0 [°] 9065
15	17 [°] 26	0 [°] 8775	5 17	1 [°] 2737	97 18	0 [°] 9074
16	17 [°] 34	0 [°] 8796	5 10	1 [°] 2736	96 15	0 [°] 9083
17	17 [°] 43	0 [°] 8816	5 3	1 [°] 2734	95 11	0 [°] 9089
18	+17 [°] 52	+0 [°] 8837	4 57	+1 [°] 2733	94 7	+0 [°] 9095
19	17 [°] 60	0 [°] 8857	4 51	1 [°] 2732	93 3	0 [°] 9099
20	17 [°] 68	0 [°] 8877	4 45	1 [°] 2732	91 59	0 [°] 9102
21	17 [°] 77	0 [°] 8898	4 39	1 [°] 2731	90 55	0 [°] 9104
22	17 [°] 85	0 [°] 8918	4 34	1 [°] 2731	89 51	0 [°] 9104
23	+17 [°] 94	+0 [°] 8938	4 29	+1 [°] 2732	88 47	+0 [°] 9103
24	18 [°] 02	0 [°] 8958	4 25	1 [°] 2732	87 43	0 [°] 9101
25	18 [°] 11	0 [°] 8978	4 21	1 [°] 2733	86 38	0 [°] 9098
26	18 [°] 19	0 [°] 8998	4 17	1 [°] 2734	85 34	0 [°] 9093
27	18 [°] 28	0 [°] 9018	4 13	1 [°] 2735	84 30	0 [°] 9087
28	+18 [°] 36	+0 [°] 9038	4 10	+1 [°] 2736	83 26	+0 [°] 9080
29	18 [°] 45	0 [°] 9058	4 7	1 [°] 2737	82 22	0 [°] 9072
30	18 [°] 54	0 [°] 9078	4 4	1 [°] 2739	81 17	0 [°] 9062
Oct. 1	18 [°] 62	0 [°] 9098	4 2	1 [°] 2741	80 13	0 [°] 9051
2	18 [°] 71	0 [°] 9118	4 0	1 [°] 2743	79 9	0 [°] 9038
3	+18 [°] 80	+0 [°] 9138	3 58	+1 [°] 2746	78 5	+0 [°] 9024

APPARENT PLACES OF STARS, 1889. 30.

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .		
Oct.	4	+ 18° 88	+ 0° 9158	3 57	+ 1° 2749	77 1	+ 0° 9009	
	5	18° 97	0° 9178	3 55	1° 2752	75 57	0° 8992	
	6	19° 06	0° 9198	3 54	1° 2755	74 53	0° 8975	
	7	19° 15	0° 9219	3 53	1° 2758	73 49	0° 8956	
	8	19° 24	0° 9239	3 53	1° 2762	72 45	0° 8935	
	9	+ 19° 33	+ 0° 9259	3 52	+ 1° 2766	71 42	+ 0° 8913	
	10	19° 43	0° 9280	3 52	1° 2770	70 38	0° 8890	
	11	19° 52	0° 9301	3 52	1° 2774	69 34	0° 8865	
	12	19° 61	0° 9321	3 53	1° 2778	68 31	0° 8838	
	13	19° 71	0° 9342	3 53	1° 2783	67 27	0° 8810	
	14	+ 19° 80	+ 0° 9363	3 54	+ 1° 2787	66 24	+ 0° 8781	
	15	19° 90	0° 9385	3 54	1° 2792	65 21	0° 8750	
	16	19° 99	0° 9406	3 55	1° 2797	64 18	0° 8718	
	17	20° 09	0° 9427	3 57	1° 2802	63 15	0° 8684	
	18	20° 19	0° 9449	3 58	1° 2807	62 12	0° 8648	
	19	+ 20° 29	+ 0° 9470	3 59	+ 1° 2813	61 10	+ 0° 8610	
	20	20° 39	0° 9492	4 1	1° 2819	60 7	0° 8571	
	21	20° 50	0° 9514	4 3	1° 2824	59 4	0° 8531	
	22	20° 60	0° 9536	4 4	1° 2830	58 1	0° 8489	
	23	20° 71	0° 9558	4 6	1° 2836	56 59	0° 8444	
	24	+ 20° 81	+ 0° 9581	4 8	+ 1° 2842	55 57	+ 0° 8398	
	25	20° 92	0° 9603	4 10	1° 2848	54 55	0° 8351	
	26	21° 03	0° 9626	4 12	1° 2854	53 53	0° 8301	
	27	21° 14	0° 9649	4 14	1° 2860	52 51	0° 8249	
	28	21° 25	0° 9672	4 17	1° 2867	51 50	0° 8196	
	29	+ 21° 36	+ 0° 9695	4 19	+ 1° 2873	50 49	+ 0° 8140	
	30	21° 48	0° 9719	4 21	1° 2880	49 48	0° 8082	
	31	21° 59	0° 9742	4 24	1° 2886	48 47	0° 8022	
	Nov.	1	21° 71	0° 9766	4 26	1° 2893	47 47	0° 7960
		2	21° 83	0° 9790	4 28	1° 2899	46 46	0° 7896
		3	+ 21° 95	+ 0° 9814	4 31	+ 1° 2906	45 45	+ 0° 7829
4		22° 07	0° 9838	4 33	1° 2912	44 44	0° 7760	
5		22° 19	0° 9862	4 35	1° 2919	43 44	0° 7688	
6		22° 32	0° 9887	4 37	1° 2926	42 43	0° 7614	
7		22° 44	0° 9911	4 40	1° 2932	41 43	0° 7537	
8		+ 22° 57	+ 0° 9936	4 42	+ 1° 2939	40 44	+ 0° 7457	
9		22° 70	0° 9961	4 44	1° 2945	39 44	0° 7375	
10		22° 83	0° 9986	4 46	1° 2951	38 45	0° 7289	
11		22° 96	1° 0011	4 48	1° 2958	37 45	0° 7200	
12		23° 09	1° 0036	4 50	1° 2964	36 46	0° 7108	
13		+ 23° 23	+ 1° 0062	4 52	+ 1° 2970	35 47	+ 0° 7013	
14		23° 36	1° 0087	4 53	1° 2977	34 48	0° 6914	
15		23° 50	1° 0113	4 55	1° 2983	33 49	0° 6811	
16		23° 64	1° 0138	4 57	1° 2989	32 51	0° 6704	
17		23° 78	1° 0164	4 58	1° 2995	31 52	0° 6593	
18		+ 23° 92	+ 1° 0190	4 59	+ 1° 3001	30 53	+ 0° 6478	

108 APPARENT PLACES OF STARS, 1889.

QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log <i>g</i> .	<i>G</i>	Log <i>h</i> .	<i>H</i>	Log <i>i</i> .
Nov. 19	+24.06	+1.0216	5 1	+1.3007	29 55	+0.6358
20	24.20	1.0242	5 2	1.3012	28 57	0.6234
21	24.35	1.0268	5 3	1.3018	27 59	0.6104
22	24.50	1.0294	5 3	1.3023	27 1	0.5969
23	24.64	1.0320	5 4	1.3028	26 3	0.5828
24	+24.79	+1.0347	5 4	+1.3034	25 5	+0.5681
25	24.94	1.0373	5 5	1.3039	24 8	0.5527
26	25.09	1.0399	5 5	1.3043	23 11	0.5366
27	25.25	1.0425	5 5	1.3048	22 13	0.5198
28	25.40	1.0452	5 5	1.3053	21 16	0.5021
29	+25.55	+1.0478	5 4	+1.3057	20 19	+0.4835
30	25.71	1.0504	5 4	1.3061	19 22	0.4640
Dec. 1	25.87	1.0531	5 3	1.3065	18 25	0.4433
2	26.02	1.0557	5 2	1.3069	17 28	0.4215
3	26.18	1.0583	5 1	1.3073	16 31	0.3984
4	+26.34	+1.0609	5 0	+1.3077	15 35	+0.3739
5	26.50	1.0635	4 59	1.3080	14 38	0.3477
6	26.66	1.0662	4 58	1.3083	13 41	0.3197
7	26.82	1.0688	4 56	1.3086	12 45	0.2897
8	26.99	1.0714	4 54	1.3089	11 48	0.2572
9	+27.15	+1.0740	4 52	+1.3092	10 52	+0.2219
10	27.31	1.0766	4 50	1.3094	9 55	0.1834
11	27.48	1.0791	4 47	1.3096	8 59	0.1409
12	27.64	1.0817	4 45	1.3098	8 3	0.0937
13	27.81	1.0843	4 42	1.3100	7 7	0.0405
14	+27.97	+1.0868	4 39	+1.3101	6 11	+9.9797
15	28.14	1.0894	4 36	1.3102	5 15	9.9089
16	28.30	1.0919	4 33	1.3103	4 19	9.8239
17	28.47	1.0944	4 30	1.3104	3 23	9.7181
18	28.64	1.0969	4 26	1.3105	2 27	9.5775
19	+28.80	+1.0994	4 23	+1.3106	1 31	+9.3683
20	28.97	1.1019	4 19	1.3106	0 35	+8.9484
21	29.14	1.1043	4 15	1.3106	359 39	-8.7477
22	29.31	1.1068	4 11	1.3106	358 42	9.3025
23	29.47	1.1092	4 7	1.3105	357 46	9.5383
24	+29.64	+1.1116	4 2	+1.3105	356 50	-9.6901
25	29.81	1.1140	3 58	1.3104	355 54	9.8023
26	29.97	1.1164	3 53	1.3103	354 58	9.8913
27	30.14	1.1188	3 48	1.3102	354 1	9.9648
28	30.30	1.1211	3 44	1.3100	353 5	0.0278
29	+30.47	+1.1234	3 39	+1.3098	352 9	-0.0826
30	30.64	1.1257	3 34	1.3096	351 13	0.1311
31	30.80	1.1280	3 28	1.3094	350 16	0.1746
32	+30.96	+1.1303	3 23	+1.3092	349 20	-0.2141

APPARENT PLACES OF STARS, 1889. 30

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ursæ Min. (Polaris)			Cephei 51 (Hév.).			δ Ursæ Min.			σ Octantis.			λ Ursæ Min.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	^h ^m ^s 1 17	[°] ['] ["] 88 43		^h ^m ^s 6 48	[°] ['] ["] 87 13		^h ^m ^s 18 7	[°] ['] ["] 86 36		^h ^m ^s 18 38	[°] ['] ["] 89 15		^h ^m ^s 19 33	[°] ['] ["] 88 57	
Jan. 1	79° 30'	12° 5'		34° 26'	5° 7'		50° 45'	40° 9'		13° 73'	61° 6'		51° 18'	58° 5'	
2	78° 30'	12° 6'		34° 40'	6° 0'		50° 44'	40° 5'		14° 39'	61° 2'		50° 57'	58° 2'	
3	77° 25'	12° 7'		34° 53'	6° 4'		50° 45'	40° 2'		14° 99'	60° 9'		49° 99'	57° 9'	
4	76° 17'	12° 8'		34° 61'	6° 7'		50° 48'	39° 8'		15° 52'	60° 5'		49° 48'	57° 5'	
5	75° 08'	12° 9'		34° 66'	7° 0'		50° 54'	39° 5'		15° 99'	60° 2'		49° 05'	57° 2'	
6	74° 01'	13° 0'		34° 68'	7° 3'		50° 62'	39° 1'		16° 42'	59° 9'		48° 71'	56° 9'	
7	72° 98'	13° 1'		34° 67'	7° 6'		50° 70'	38° 8'		16° 87'	59° 5'		48° 44'	56° 6'	
8	72° 00'	13° 1'		34° 66'	8° 0'		50° 78'	38° 4'		17° 39'	59° 2'		48° 22'	56° 2'	
9	71° 06'	13° 2'		34° 64'	8° 3'		50° 86'	38° 1'		17° 98'	58° 9'		48° 04'	55° 9'	
10	70° 16'	13° 2'		34° 64'	8° 7'		50° 93'	37° 7'		18° 69'	58° 6'		47° 87'	55° 5'	
11	69° 28'	13° 3'		34° 66'	9° 0'		51° 00'	37° 4'		19° 50'	58° 3'		47° 49'	55° 1'	
12	68° 40'	13° 3'		34° 68'	9° 3'		51° 06'	37° 1'		20° 43'	58° 0'		47° 23'	54° 6'	
13	67° 51'	13° 3'		34° 71'	9° 7'		51° 12'	36° 7'		21° 42'	57° 7'		46° 96'	54° 2'	
14	66° 59'	13° 4'		34° 74'	10° 0'		51° 19'	36° 4'		22° 47'	57° 4'		46° 69'	53° 9'	
15	65° 64'	13° 4'		34° 78'	10° 4'		51° 25'	36° 0'		23° 53'	57° 1'		46° 43'	53° 6'	
16	64° 63'	13° 4'		34° 79'	10° 7'		51° 34'	35° 7'		24° 60'	56° 8'		46° 21'	53° 2'	
17	63° 58'	13° 4'		34° 79'	11° 0'		51° 45'	35° 3'		25° 65'	56° 5'		46° 03'	52° 9'	
18	62° 50'	13° 4'		34° 75'	11° 4'		51° 58'	35° 0'		26° 65'	56° 2'		45° 92'	52° 6'	
19	61° 40'	13° 4'		34° 69'	11° 7'		51° 73'	34° 7'		27° 61'	55° 9'		45° 88'	52° 2'	
20	60° 29'	13° 4'		34° 59'	12° 0'		51° 90'	34° 4'		28° 51'	55° 6'		45° 93'	51° 9'	
21	59° 22'	13° 4'		34° 47'	12° 3'		52° 09'	34° 1'		29° 39'	55° 3'		46° 04'	51° 6'	
22	58° 19'	13° 3'		34° 33'	12° 6'		52° 28'	33° 8'		30° 28'	55° 0'		46° 19'	51° 3'	
23	57° 23'	13° 3'		34° 19'	13° 0'		52° 47'	33° 5'		31° 24'	54° 7'		46° 36'	50° 9'	
24	56° 33'	13° 3'		34° 05'	13° 3'		52° 65'	33° 2'		32° 29'	54° 4'		46° 52'	50° 6'	
25	55° 47'	13° 2'		33° 93'	13° 6'		52° 81'	32° 9'		33° 48'	54° 1'		46° 64'	50° 2'	
26	54° 63'	13° 2'		33° 82'	13° 9'		52° 97'	32° 6'		34° 80'	53° 9'		46° 73'	49° 9'	
27	53° 79'	13° 1'		33° 73'	14° 2'		53° 12'	32° 3'		36° 23'	53° 6'		46° 77'	49° 6'	
28	52° 89'	13° 1'		33° 65'	14° 5'		53° 27'	32° 0'		37° 70'	53° 3'		46° 80'	49° 3'	
29	51° 94'	13° 0'		33° 56'	14° 8'		53° 44'	31° 7'		39° 19'	53° 0'		46° 86'	48° 9'	
30	50° 92'	12° 9'		33° 46'	15° 1'		53° 62'	31° 4'		40° 62'	52° 7'		46° 98'	48° 6'	
Feb. 31	49° 87'	12° 8'		33° 31'	15° 4'		53° 83'	31° 1'		41° 97'	52° 5'		47° 18'	48° 3'	
1	48° 80'	12° 7'		33° 13'	15° 7'		54° 07'	30° 8'		43° 24'	52° 3'		47° 47'	48° 0'	
2	47° 75'	12° 6'		32° 92'	16° 0'		54° 32'	30° 5'		44° 47'	52° 0'		47° 85'	47° 6'	
3	46° 73'	12° 5'		32° 68'	16° 3'		54° 59'	30° 2'		45° 67'	51° 8'		48° 28'	47° 3'	
4	45° 78'	12° 4'		32° 42'	16° 6'		54° 86'	29° 9'		46° 91'	51° 5'		48° 74'	47° 0'	
5	44° 89'	12° 3'		32° 17'	16° 9'		55° 12'	29° 7'		48° 23'	51° 3'		49° 22'	46° 7'	
6	44° 05'	12° 2'		31° 93'	17° 2'		55° 38'	29° 5'		49° 62'	51° 1'		49° 68'	46° 4'	
7	43° 24'	12° 0'		31° 70'	17° 5'		55° 62'	29° 2'		51° 12'	50° 8'		50° 11'	46° 0'	
8	42° 46'	11° 9'		31° 48'	17° 8'		55° 86'	29° 0'		52° 70'	50° 6'		50° 53'	45° 7'	
9	41° 69'	11° 8'		31° 27'	18° 1'		56° 09'	28° 7'		54° 36'	50° 3'		50° 92'	45° 4'	
10	40° 88'	11° 6'		31° 07'	18° 3'		56° 32'	28° 5'		56° 07'	50° 1'		51° 29'	45° 1'	
11	40° 06'	11° 4'		30° 87'	18° 6'		56° 56'	28° 3'		57° 82'	49° 9'		51° 66'	44° 8'	
12	39° 20'	11° 3'		30° 67'	18° 8'		56° 80'	28° 0'		59° 58'	49° 7'		52° 04'	44° 5'	
13	38° 30'	11° 1'		30° 45'	19° 1'		57° 06'	27° 8'		61° 31'	49° 4'		52° 49'	44° 2'	
14	37° 39'	11° 0'		30° 20'	19° 3'		57° 35'	27° 6'		62° 98'	49° 2'		52° 99'	43° 9'	
15	36° 45'	10° 8'		29° 92'	19° 5'		57° 65'	27° 4'		64° 61'	49° 0'		53° 56'	43° 6'	

310 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ursæ Min. (Polaris)			Cephei 51 (Rev.).			δ Ursæ Min.			ϵ Octantis.			λ Ursæ Min.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	h	m	°	h	m	°	h	m	°	h	m	°	h	m	°
	1	17	88 42	6 48	87 13	18 7	86 36	18 39	89 15	19 33	88 57				
Feb. 16	35° 53	70° 7	29° 62	19° 8	57° 98	27° 2	6° 17	48° 8	54° 22	43° 3					
17	34° 63	70° 5	29° 29	20° 0	58° 31	27° 0	7° 68	48° 6	54° 94	43° 0					
18	33° 78	70° 3	28° 93	20° 2	58° 65	26° 8	9° 18	48° 4	55° 72	42° 7					
19	32° 99	70° 1	28° 57	20° 5	58° 99	26° 6	10° 71	48° 2	56° 52	42° 4					
20	32° 27	69° 9	28° 22	20° 7	59° 32	26° 4	12° 32	48° 0	57° 29	42° 2					
21	31° 62	69° 7	27° 89	20° 9	59° 63	26° 2	14° 04	47° 8	58° 02	41° 9					
22	30° 99	69° 5	27° 57	21° 2	59° 93	26° 0	15° 89	47° 6	58° 71	41° 7					
23	30° 38	69° 3	27° 28	21° 4	60° 22	25° 8	17° 83	47° 4	59° 35	41° 4					
24	29° 75	69° 1	27° 00	21° 6	60° 50	25° 6	19° 84	47° 2	59° 97	41° 2					
25	29° 08	68° 8	26° 72	21° 8	60° 79	25° 5	21° 86	47° 1	60° 61	40° 9					
26	28° 35	68° 6	26° 43	22° 0	61° 10	25° 4	23° 83	46° 9	61° 28	40° 7					
27	27° 58	68° 3	26° 11	22° 2	61° 42	25° 2	25° 73	46° 8	62° 02	40° 4					
28	26° 79	68° 1	25° 76	22° 4	61° 77	25° 1	27° 55	46° 6	62° 83	40° 2					
Mar. 1	26° 02	67° 8	25° 38	22° 6	62° 14	24° 9	29° 29	46° 5	63° 73	39° 9					
2	25° 27	67° 6	24° 97	22° 7	62° 52	24° 8	30° 97	46° 3	64° 69	39° 7					
3	24° 60	67° 3	24° 55	22° 9	62° 89	24° 7	32° 65	46° 2	65° 68	39° 4					
4	23° 99	67° 1	24° 12	23° 0	63° 27	24° 6	34° 36	46° 0	66° 68	39° 2					
5	23° 45	66° 8	23° 70	23° 2	63° 64	24° 5	36° 16	45° 9	67° 68	39° 0					
6	22° 97	66° 6	23° 30	23° 3	63° 99	24° 4	38° 04	45° 7	68° 65	38° 8					
7	22° 52	66° 3	22° 92	23° 5	64° 33	24° 3	40° 01	45° 6	69° 59	38° 6					
8	22° 09	66° 0	22° 55	23° 6	64° 65	24° 2	42° 06	45° 5	70° 49	38° 4					
9	21° 64	65° 8	22° 19	23° 8	64° 97	24° 1	44° 15	45° 4	71° 36	38° 2					
10	21° 19	65° 5	21° 84	23° 9	65° 30	24° 0	46° 28	45° 3	72° 21	38° 0					
11	20° 73	65° 3	21° 49	24° 1	65° 63	23° 9	48° 41	45° 2	73° 07	37° 8					
12	20° 22	65° 0	21° 14	24° 2	65° 97	23° 9	50° 52	45° 1	73° 94	37° 7					
13	19° 69	64° 8	20° 77	24° 3	66° 32	23° 8	52° 58	45° 0	74° 87	37° 5					
14	19° 15	64° 5	20° 37	24° 4	66° 69	23° 8	54° 56	44° 9	75° 85	37° 4					
15	18° 60	64° 2	19° 95	24° 5	67° 07	23° 7	56° 45	44° 8	76° 90	37° 2					
16	18° 07	63° 9	19° 50	24° 6	67° 46	23° 7	58° 27	44° 7	78° 03	37° 1					
17	17° 61	63° 6	19° 04	24° 7	67° 86	23° 6	60° 07	44° 7	79° 21	36° 9					
18	17° 21	63° 3	18° 57	24° 8	68° 26	23° 6	61° 87	44° 6	80° 40	36° 8					
19	16° 90	63° 0	18° 10	24° 9	68° 64	23° 6	63° 72	44° 6	81° 58	36° 6					
20	16° 65	62° 7	17° 65	25° 0	69° 01	23° 5	65° 67	44° 5	82° 72	36° 5					
21	16° 46	62° 4	17° 23	25° 1	69° 36	23° 5	67° 72	44° 5	83° 79	36° 3					
22	16° 27	62° 1	16° 84	25° 1	69° 70	23° 5	69° 87	44° 4	84° 81	36° 2					
23	16° 08	61° 8	16° 47	25° 2	70° 02	23° 5	72° 08	44° 4	85° 78	36° 1					
24	15° 85	61° 5	16° 11	25° 2	70° 34	23° 5	74° 31	44° 3	86° 74	36° 0					
25	15° 59	61° 2	15° 74	25° 3	70° 67	23° 6	76° 50	44° 3	87° 72	35° 9					
26	15° 28	60° 9	15° 35	25° 3	71° 03	23° 6	78° 62	44° 3	88° 75	35° 8					
27	14° 96	60° 6	14° 93	25° 3	71° 40	23° 6	80° 63	44° 2	89° 85	35° 7					
28	14° 64	60° 3	14° 49	25° 3	71° 78	23° 7	82° 56	44° 2	91° 01	35° 6					
29	14° 34	60° 0	14° 03	25° 4	72° 17	23° 7	84° 41	44° 2	92° 23	35° 6					
30	14° 12	59° 7	13° 55	25° 4	72° 57	23° 7	86° 23	44° 2	93° 49	35° 5					
31	13° 95	59° 4	13° 07	25° 4	72° 95	23° 8	88° 07	44° 2	94° 75	35° 5					
Apr. 1	13° 85	59° 1	12° 60	25° 4	73° 32	23° 8	89° 95	44° 2	96° 01	35° 4					
2	13° 81	58° 8	12° 13	25° 4	73° 68	23° 9	91° 90	44° 2	97° 22	35° 4					

APPARENT PLACES OF STARS, 1889. 311

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ursæ Min. (Polaris)		Cephei 51 (Hev.).		δ Ursæ Min.		ϵ Octantis.		λ Ursæ Min.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h ^m I 17	[°] ['] 88 42	^h ^m 6 47	[°] ['] 87 13	^h ^m 18 8	[°] ['] 86 36	^h ^m 18 40	[°] ['] 89 15	^h ^m 19 34	[°] ['] 88 57
Apr. 3	13 ^s .82	58 ["] .4	71 ^s .70	25 ["] .3	14 ^s .02	24 ["] .0	33 ^s .92	44 ["] .2	38 ^s .38	35 ["] .3
4	13 ^s .86	58 ["] .1	71 ^s .30	25 ["] .3	14 ^s .35	24 ["] .1	36 ^s .01	44 ["] .3	39 ^s .51	35 ["] .3
5	13 ^s .91	57 ["] .8	70 ^s .91	25 ["] .3	14 ^s .67	24 ["] .2	38 ^s .16	44 ["] .3	40 ^s .59	35 ["] .3
6	13 ^s .95	57 ["] .5	70 ^s .53	25 ["] .3	14 ^s .98	24 ["] .2	40 ^s .32	44 ["] .3	41 ^s .65	35 ["] .2
7	13 ^s .98	57 ["] .2	70 ^s .16	25 ["] .2	15 ^s .29	24 ["] .3	42 ^s .50	44 ["] .4	42 ^s .67	35 ["] .2
8	13 ^s .99	56 ["] .9	69 ^s .79	25 ["] .2	15 ^s .60	24 ["] .4	44 ^s .65	44 ["] .4	43 ^s .70	35 ["] .2
9	13 ^s .97	56 ["] .6	69 ^s .42	25 ["] .2	15 ^s .92	24 ["] .5	46 ^s .74	44 ["] .4	44 ^s .76	35 ["] .1
10	^{13.98} ^{56.3}	^{56.3}	69 ^s .03	25 ["] .1	16 ^s .25	24 ["] .6	48 ^s .77	44 ["] .5	45 ^s .85	35 ["] .1
11	13 ^s .86	55 ["] .7	68 ^s .62	25 ["] .1	16 ^s .60	24 ["] .7	50 ^s .70	44 ["] .5	47 ^s .00	35 ["] .1
12	13 ^s .86	55 ["] .4	68 ^s .19	25 ["] .0	16 ^s .95	24 ["] .8	52 ^s .54	44 ["] .6	48 ^s .22	35 ["] .1
13	13 ^s .92	55 ["] .1	67 ^s .74	25 ["] .0	17 ^s .31	25 ["] .0	54 ^s .32	44 ["] .6	49 ^s .48	35 ["] .1
14	14 ^s .06	54 ["] .8	67 ^s .28	24 ["] .9	17 ^s .67	25 ["] .1	56 ^s .07	44 ["] .7	50 ^s .76	35 ["] .2
15	14 ^s .28	54 ["] .5	66 ^s .82	24 ["] .8	18 ^s .02	25 ["] .3	57 ^s .84	44 ["] .7	52 ^s .03	35 ["] .2
16	14 ^s .57	54 ["] .2	66 ^s .38	24 ["] .7	18 ^s .34	25 ["] .4	59 ^s .68	44 ["] .8	53 ^s .26	35 ["] .2
17	14 ^s .90	53 ["] .9	65 ^s .98	24 ["] .6	18 ^s .64	25 ["] .6	61 ^s .61	44 ["] .8	54 ^s .41	35 ["] .3
18	15 ^s .22	53 ["] .6	65 ^s .60	24 ["] .5	18 ^s .93	25 ["] .7	63 ^s .65	44 ["] .9	55 ^s .48	35 ["] .3
19	15 ^s .49	53 ["] .3	65 ^s .26	24 ["] .4	19 ^s .19	25 ["] .9	65 ^s .76	45 ["] .0	56 ^s .50	35 ["] .4
20	15 ^s .74	53 ["] .0	64 ^s .93	24 ["] .3	19 ^s .45	26 ["] .0	67 ^s .87	45 ["] .1	57 ^s .48	35 ["] .4
21	15 ^s .95	52 ["] .7	64 ^s .60	24 ["] .2	19 ^s .72	26 ["] .2	69 ^s .97	45 ["] .2	58 ^s .45	35 ["] .5
22	16 ^s .12	52 ["] .4	64 ^s .27	24 ["] .1	19 ^s .99	26 ["] .4	71 ^s .98	45 ["] .3	59 ^s .45	35 ["] .5
23	16 ^s .28	52 ["] .1	63 ^s .92	24 ["] .0	20 ^s .28	26 ["] .5	73 ^s .90	45 ["] .4	60 ^s .50	35 ["] .6
24	16 ^s .47	51 ["] .8	63 ^s .55	23 ["] .9	20 ^s .58	26 ["] .7	75 ^s .70	45 ["] .5	61 ^s .60	35 ["] .7
25	16 ^s .71	51 ["] .5	63 ^s .15	23 ["] .8	20 ^s .89	26 ["] .9	77 ^s .42	45 ["] .6	62 ^s .77	35 ["] .8
26	17 ^s .01	51 ["] .3	62 ^s .74	23 ["] .6	21 ^s .20	27 ["] .1	79 ^s .07	45 ["] .7	63 ^s .96	35 ["] .9
27	17 ^s .38	51 ["] .0	62 ^s .33	23 ["] .4	21 ^s .51	27 ["] .3	80 ^s .70	45 ["] .8	65 ^s .15	36 ["] .0
28	17 ^s .81	50 ["] .7	61 ^s .93	23 ["] .3	21 ^s .81	27 ["] .5	82 ^s .37	45 ["] .9	66 ^s .32	36 ["] .1
29	18 ^s .29	50 ["] .4	61 ^s .54	23 ["] .1	22 ^s .08	27 ["] .7	84 ^s .08	46 ["] .1	67 ^s .47	36 ["] .2
30	18 ^s .81	50 ["] .1	61 ^s .19	23 ["] .0	22 ^s .33	27 ["] .9	85 ^s .85	46 ["] .2	68 ^s .56	36 ["] .3
May 1	19 ^s .34	49 ["] .9	60 ^s .85	22 ["] .8	22 ^s .56	28 ["] .2	87 ^s .70	46 ["] .4	69 ^s .59	36 ["] .5
2	19 ^s .85	49 ["] .6	60 ^s .55	22 ["] .7	22 ^s .78	28 ["] .4	89 ^s .59	46 ["] .6	70 ^s .57	36 ["] .6
3	20 ^s .35	49 ["] .4	60 ^s .26	22 ["] .5	22 ^s .99	28 ["] .7	91 ^s .49	46 ["] .7	71 ^s .50	36 ["] .8
4	20 ^s .83	49 ["] .1	59 ^s .99	22 ["] .3	23 ^s .19	28 ["] .9	93 ^s .41	46 ["] .9	72 ^s .39	36 ["] .9
5	21 ^s .29	48 ["] .9	59 ^s .72	22 ["] .1	23 ^s .40	29 ["] .2	95 ^s .29	47 ["] .0	73 ^s .26	37 ["] .1
6	21 ^s .72	48 ["] .6	59 ^s .46	21 ["] .9	23 ^s .61	29 ["] .4	97 ^s .13	47 ["] .2	74 ^s .13	37 ["] .2
7	22 ^s .13	48 ["] .4	59 ^s .19	21 ["] .7	23 ^s .82	29 ["] .6	98 ^s .89	47 ["] .4	75 ^s .03	37 ["] .4
8	22 ^s .54	48 ["] .1	58 ^s .89	21 ["] .5	24 ^s .05	29 ["] .9	100 ^s .55	47 ["] .5	75 ^s .97	37 ["] .5
9	22 ^s .97	47 ["] .9	58 ^s .59	21 ["] .3	24 ^s .28	30 ["] .1	102 ^s .12	47 ["] .7	76 ^s .95	37 ["] .7
10	23 ^s .45	47 ["] .6	58 ^s .26	21 ["] .1	24 ^s .51	30 ["] .4	103 ^s .60	47 ["] .8	77 ^s .98	37 ["] .8
11	23 ^s .99	47 ["] .4	57 ^s .93	20 ["] .9	24 ^s .74	30 ["] .6	105 ^s .03	48 ["] .0	79 ^s .03	38 ["] .0
12	24 ^s .61	47 ["] .2	57 ^s .59	20 ["] .7	24 ^s .97	30 ["] .9	106 ^s .43	48 ["] .2	80 ^s .08	38 ["] .2
13	25 ^s .30	46 ["] .9	57 ^s .27	20 ["] .5	25 ^s .18	31 ["] .1	107 ^s .86	48 ["] .4	81 ^s .09	38 ["] .3
14	26 ^s .05	46 ["] .7	56 ^s .98	20 ["] .3	25 ^s .37	31 ["] .4	109 ^s .37	48 ["] .6	82 ^s .04	38 ["] .5
15	26 ^s .80	46 ["] .5	56 ^s .72	20 ["] .1	25 ^s .52	31 ["] .6	110 ^s .97	48 ["] .8	82 ^s .90	38 ["] .7
16	27 ^s .54	46 ["] .3	56 ^s .50	19 ["] .8	25 ^s .66	31 ["] .9	112 ^s .66	49 ["] .0	83 ^s .67	38 ["] .9
17	28 ^s .23	46 ["] .1	56 ^s .32	19 ["] .6	25 ^s .78	32 ["] .2	114 ^s .41	49 ["] .2	84 ^s .37	39 ["] .1
18	28 ^s .85	45 ["] .9	56 ^s .14	19 ["] .3	25 ^s .90	32 ["] .4	116 ^s .13	49 ["] .4	85 ^s .05	39 ["] .3

312 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.											
Month and Day.	α Ursæ Min. (Polaris)		Cephei 51 (Hev.).		δ Ursæ Min.		σ Octantis.		λ Ursæ Min.		
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.	
	^h ^m 1 17	^o ['] 88 42	^h ^m 6 47	^o ['] 87 13	^h ^m 18 8	^o ['] 86 36	^h ^m 18 41	^o ['] 89 15	^h ^m 19 35	^o ['] 88 57	
May 19	29 ^h 43 ^m	45 ^o 7 [']	55 ^h 97 ^m	19 ^o 1 [']	26 ^h 03 ^m	32 ^o 7 [']	57 ^h 76 ^m	49 ^o 6 [']	25 ^h 73 ^m	39 ^o 5 [']	
20	29 ^h 99 ^m	45 ^o 5 [']	55 ^h 78 ^m	18 ^o 8 [']	26 ^h 17 ^m	33 ^o 0 [']	59 ^h 27 ^m	49 ^o 8 [']	26 ^h 47 ^m	39 ^o 7 [']	
21	30 ^h 57 ^m	45 ^o 3 [']	55 ^h 56 ^m	18 ^o 6 [']	26 ^h 32 ^m	33 ^o 3 [']	60 ^h 67 ^m	50 ^o 0 [']	27 ^h 25 ^m	39 ^o 9 [']	
22	31 ^h 18 ^m	45 ^o 1 [']	55 ^h 33 ^m	18 ^o 3 [']	26 ^h 48 ^m	33 ^o 6 [']	61 ^h 96 ^m	50 ^o 2 [']	28 ^h 08 ^m	40 ^o 2 [']	
23	31 ^h 84 ^m	44 ^o 9 [']	55 ^h 09 ^m	18 ^o 1 [']	26 ^h 64 ^m	33 ^o 8 [']	63 ^h 17 ^m	50 ^o 5 [']	28 ^h 93 ^m	40 ^o 5 [']	
24	32 ^h 57 ^m	44 ^o 7 [']	54 ^h 83 ^m	17 ^o 8 [']	26 ^h 80 ^m	34 ^o 1 [']	64 ^h 34 ^m	50 ^o 7 [']	29 ^h 79 ^m	40 ^o 7 [']	
25	33 ^h 35 ^m	44 ^o 5 [']	54 ^h 59 ^m	17 ^o 6 [']	26 ^h 94 ^m	34 ^o 4 [']	65 ^h 51 ^m	51 ^o 0 [']	30 ^h 62 ^m	40 ^o 9 [']	
26	34 ^h 18 ^m	44 ^o 4 [']	54 ^h 36 ^m	17 ^o 3 [']	27 ^h 07 ^m	34 ^o 7 [']	66 ^h 73 ^m	51 ^o 2 [']	31 ^h 42 ^m	41 ^o 1 [']	
27	35 ^h 05 ^m	44 ^o 3 [']	54 ^h 17 ^m	17 ^o 0 [']	27 ^h 17 ^m	35 ^o 0 [']	67 ^h 99 ^m	51 ^o 4 [']	32 ^h 16 ^m	41 ^o 3 [']	
28	35 ^h 93 ^m	44 ^o 1 [']	54 ^h 01 ^m	16 ^o 8 [']	27 ^h 26 ^m	35 ^o 3 [']	69 ^h 29 ^m	51 ^o 7 [']	32 ^h 84 ^m	41 ^o 6 [']	
29	36 ^h 81 ^m	44 ^o 0 [']	53 ^h 87 ^m	16 ^o 5 [']	27 ^h 33 ^m	35 ^o 6 [']	70 ^h 65 ^m	51 ^o 9 [']	33 ^h 46 ^m	41 ^o 8 [']	
30	37 ^h 66 ^m	43 ^o 8 [']	53 ^h 75 ^m	16 ^o 3 [']	27 ^h 38 ^m	35 ^o 9 [']	72 ^h 04 ^m	52 ^o 2 [']	34 ^h 00 ^m	42 ^o 1 [']	
June 31	38 ^h 49 ^m	43 ^o 7 [']	53 ^h 65 ^m	16 ^o 0 [']	27 ^h 42 ^m	36 ^o 2 [']	73 ^h 44 ^m	52 ^o 4 [']	34 ^h 51 ^m	42 ^o 3 [']	
1	39 ^h 27 ^m	43 ^o 5 [']	53 ^h 56 ^m	15 ^o 7 [']	27 ^h 46 ^m	36 ^o 5 [']	74 ^h 81 ^m	52 ^o 7 [']	34 ^h 99 ^m	42 ^o 6 [']	
2	40 ^h 03 ^m	43 ^o 4 [']	53 ^h 48 ^m	15 ^o 4 [']	27 ^h 50 ^m	36 ^o 8 [']	76 ^h 11 ^m	52 ^o 9 [']	35 ^h 46 ^m	42 ^o 8 [']	
3	40 ^h 77 ^m	43 ^o 3 [']	53 ^h 39 ^m	15 ^o 1 [']	27 ^h 55 ^m	37 ^o 1 [']	77 ^h 33 ^m	53 ^o 2 [']	35 ^h 94 ^m	43 ^o 1 [']	
4	41 ^h 49 ^m	43 ^o 2 [']	53 ^h 29 ^m	14 ^o 8 [']	27 ^h 60 ^m	37 ^o 4 [']	78 ^h 46 ^m	53 ^o 4 [']	36 ^h 44 ^m	43 ^o 4 [']	
5	42 ^h 22 ^m	43 ^o 1 [']	53 ^h 18 ^m	14 ^o 6 [']	27 ^h 67 ^m	37 ^o 7 [']	79 ^h 48 ^m	53 ^o 7 [']	36 ^h 98 ^m	43 ^o 7 [']	
6	42 ^h 98 ^m	43 ^o 0 [']	53 ^h 05 ^m	14 ^o 3 [']	27 ^h 74 ^m	38 ^o 0 [']	80 ^h 42 ^m	54 ^o 0 [']	37 ^h 56 ^m	43 ^o 9 [']	
7	43 ^h 80 ^m	42 ^o 9 [']	52 ^h 91 ^m	14 ^o 0 [']	27 ^h 80 ^m	38 ^o 3 [']	81 ^h 27 ^m	54 ^o 3 [']	38 ^h 16 ^m	44 ^o 2 [']	
8	44 ^h 67 ^m	42 ^o 8 [']	52 ^h 77 ^m	13 ^o 8 [']	27 ^h 87 ^m	38 ^o 6 [']	82 ^h 09 ^m	54 ^o 5 [']	38 ^h 77 ^m	44 ^o 5 [']	
9	45 ^h 61 ^m	42 ^o 7 [']	52 ^h 63 ^m	13 ^o 5 [']	27 ^h 92 ^m	38 ^o 9 [']	82 ^h 90 ^m	54 ^o 8 [']	39 ^h 35 ^m	44 ^o 8 [']	
10	46 ^h 60 ^m	42 ^o 6 [']	52 ^h 52 ^m	13 ^o 2 [']	27 ^h 94 ^m	39 ^o 3 [']	83 ^h 76 ^m	55 ^o 1 [']	39 ^h 86 ^m	45 ^o 1 [']	
11	47 ^h 63 ^m	42 ^o 5 [']	52 ^h 45 ^m	12 ^o 9 [']	27 ^h 94 ^m	39 ^o 6 [']	84 ^h 68 ^m	55 ^o 4 [']	40 ^h 29 ^m	45 ^o 3 [']	
12	48 ^h 64 ^m	42 ^o 4 [']	52 ^h 41 ^m	12 ^o 6 [']	27 ^h 92 ^m	39 ^o 9 [']	85 ^h 70 ^m	55 ^o 6 [']	40 ^h 64 ^m	45 ^o 6 [']	
13	49 ^h 61 ^m	42 ^o 3 [']	52 ^h 41 ^m	12 ^o 3 [']	27 ^h 87 ^m	40 ^o 2 [']	86 ^h 77 ^m	55 ^o 9 [']	40 ^h 89 ^m	45 ^o 9 [']	
14	50 ^h 51 ^m	42 ^o 2 [']	52 ^h 43 ^m	12 ^o 0 [']	27 ^h 82 ^m	40 ^o 5 [']	87 ^h 86 ^m	56 ^o 2 [']	41 ^h 10 ^m	46 ^o 2 [']	
15	51 ^h 34 ^m	42 ^o 2 [']	52 ^h 46 ^m	11 ^o 7 [']	27 ^h 77 ^m	40 ^o 9 [']	88 ^h 89 ^m	56 ^o 5 [']	41 ^h 30 ^m	46 ^o 5 [']	
16	52 ^h 13 ^m	42 ^o 1 [']	52 ^h 49 ^m	11 ^o 4 [']	27 ^h 73 ^m	41 ^o 2 [']	89 ^h 81 ^m	56 ^o 8 [']	41 ^h 52 ^m	46 ^o 8 [']	
17	52 ^h 91 ^m	42 ^o 1 [']	52 ^h 48 ^m	11 ^o 1 [']	27 ^h 70 ^m	41 ^o 5 [']	90 ^h 59 ^m	57 ^o 1 [']	41 ^h 79 ^m	47 ^o 1 [']	
18	53 ^h 72 ^m	42 ^o 0 [']	52 ^h 46 ^m	10 ^o 8 [']	27 ^h 68 ^m	41 ^o 8 [']	91 ^h 24 ^m	57 ^o 4 [']	42 ^h 09 ^m	47 ^o 4 [']	
19	54 ^h 58 ^m	42 ^o 0 [']	52 ^h 43 ^m	10 ^o 5 [']	27 ^h 66 ^m	42 ^o 1 [']	91 ^h 80 ^m	57 ^o 7 [']	42 ^h 43 ^m	47 ^o 7 [']	
20	55 ^h 48 ^m	42 ^o 0 [']	52 ^h 39 ^m	10 ^o 2 [']	27 ^h 64 ^m	42 ^o 5 [']	92 ^h 30 ^m	58 ^o 0 [']	42 ^h 78 ^m	48 ^o 0 [']	
21	56 ^h 45 ^m	42 ^o 0 [']	52 ^h 35 ^m	9 ^o 9 [']	27 ^h 62 ^m	42 ^o 8 [']	92 ^h 77 ^m	58 ^o 3 [']	43 ^h 12 ^m	48 ^o 3 [']	
22	57 ^h 46 ^m	41 ^o 9 [']	52 ^h 32 ^m	9 ^o 6 [']	27 ^h 57 ^m	43 ^o 1 [']	93 ^h 25 ^m	58 ^o 6 [']	43 ^h 42 ^m	48 ^o 6 [']	
23	58 ^h 50 ^m	41 ^o 9 [']	52 ^h 32 ^m	9 ^o 3 [']	27 ^h 50 ^m	43 ^o 4 [']	93 ^h 79 ^m	58 ^o 9 [']	43 ^h 66 ^m	48 ^o 9 [']	
24	59 ^h 55 ^m	41 ^o 9 [']	52 ^h 35 ^m	9 ^o 0 [']	27 ^h 42 ^m	43 ^o 7 [']	94 ^h 37 ^m	59 ^o 2 [']	43 ^h 85 ^m	49 ^o 2 [']	
25	60 ^h 60 ^m	41 ^o 9 [']	52 ^h 41 ^m	8 ^o 7 [']	27 ^h 33 ^m	44 ^o 1 [']	95 ^h 00 ^m	59 ^o 5 [']	43 ^h 97 ^m	49 ^o 6 [']	
26	61 ^h 63 ^m	41 ^o 9 [']	52 ^h 50 ^m	8 ^o 4 [']	27 ^h 21 ^m	44 ^o 4 [']	95 ^h 66 ^m	59 ^o 8 [']	44 ^h 02 ^m	49 ^o 9 [']	
27	62 ^h 62 ^m	41 ^o 9 [']	52 ^h 60 ^m	8 ^o 1 [']	27 ^h 08 ^m	44 ^o 7 [']	96 ^h 32 ^m	60 ^o 1 [']	44 ^h 02 ^m	50 ^o 2 [']	
28	63 ^h 57 ^m	41 ^o 9 [']	52 ^h 72 ^m	7 ^o 8 [']	26 ^h 94 ^m	45 ^o 0 [']	96 ^h 96 ^m	60 ^o 4 [']	43 ^h 97 ^m	50 ^o 5 [']	
29	64 ^h 48 ^m	41 ^o 9 [']	52 ^h 85 ^m	7 ^o 5 [']	26 ^h 81 ^m	45 ^o 3 [']	97 ^h 55 ^m	60 ^o 7 [']	43 ^h 90 ^m	50 ^o 8 [']	
30	65 ^h 35 ^m	41 ^o 9 [']	52 ^h 97 ^m	7 ^o 1 [']	26 ^h 68 ^m	45 ^o 6 [']	98 ^h 05 ^m	61 ^o 0 [']	43 ^h 84 ^m	51 ^o 2 [']	
July 1	66 ^h 20 ^m	42 ^o 0 [']	53 ^h 07 ^m	6 ^o 8 [']	26 ^h 56 ^m	45 ^o 9 [']	98 ^h 46 ^m	61 ^o 3 [']	43 ^h 80 ^m	51 ^o 5 [']	
2	67 ^h 05 ^m	42 ^o 0 [']	53 ^h 14 ^m	6 ^o 5 [']	26 ^h 44 ^m	46 ^o 2 [']	98 ^h 76 ^m	61 ^o 6 [']	43 ^h 78 ^m	51 ^o 8 [']	
3	67 ^h 91 ^m	42 ^o 0 [']	53 ^h 31 ^m	5 ^o 9 [']	26 ^h 33 ^m	46 ^o 5 [']	98 ^h 96 ^m	61 ^o 9 [']	43 ^h 80 ^m	52 ^o 1 [']	

APPARENT PLACES OF STARS, 1889. 31

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ursæ Min. (Polaris)		Cephei 51 (Hev.).		δ Ursæ Min.		ϵ Octantis.		λ Ursæ Min.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h 1 ^m 18	[°] 88 ['] 42	^h 6 ^m 47	[°] 87 ['] 12	^h 18 ^m 8	[°] 86 ['] 36	^h 18 ^m 42	[°] 89 ['] 16	^h 19 ^m 35	[°] 88 ['] 57
July 4	8 ^h 82 ^m	42 [°] 1 [']	53 ^h 38 ^m	65 [°] 6 [']	26 ^h 23 ^m	46 [°] 8 [']	39 ^h 06 ^m	2 [°] 2 [']	43 ^h 84 ^m	52 [°] 4 [']
5	9 ^h 78 ^m	42 [°] 1 [']	53 ^h 45 ^m	65 [°] 3 [']	26 ^h 12 ^m	47 [°] 1 [']	39 ^h 14 ^m	2 [°] 6 [']	43 ^h 90 ^m	52 [°] 8 [']
6	10 ^h 78 ^m	42 [°] 2 [']	53 ^h 55 ^m	65 [°] 0 [']	26 ^h 00 ^m	47 [°] 4 [']	39 ^h 18 ^m	2 [°] 9 [']	43 ^h 94 ^m	53 [°] 1 [']
7	11 ^h 83 ^m	42 [°] 2 [']	53 ^h 67 ^m	64 [°] 7 [']	25 ^h 86 ^m	47 [°] 7 [']	39 ^h 24 ^m	3 [°] 2 [']	43 ^h 94 ^m	53 [°] 4 [']
8	12 ^h 93 ^m	42 [°] 3 [']	53 ^h 83 ^m	64 [°] 4 [']	25 ^h 71 ^m	48 [°] 0 [']	39 ^h 35 ^m	3 [°] 5 [']	43 ^h 88 ^m	53 [°] 8 [']
9	14 ^h 01 ^m	42 [°] 3 [']	54 ^h 03 ^m	64 [°] 1 [']	25 ^h 52 ^m	48 [°] 3 [']	39 ^h 53 ^m	3 [°] 8 [']	43 ^h 72 ^m	54 [°] 1 [']
10	15 ^h 07 ^m	42 [°] 4 [']	54 ^h 27 ^m	63 [°] 8 [']	25 ^h 32 ^m	48 [°] 5 [']	39 ^h 78 ^m	4 [°] 2 [']	43 ^h 47 ^m	54 [°] 4 [']
11	16 ^h 07 ^m	42 [°] 5 [']	54 ^h 51 ^m	63 [°] 5 [']	25 ^h 10 ^m	48 [°] 8 [']	40 ^h 07 ^m	4 [°] 5 [']	43 ^h 14 ^m	54 [°] 7 [']
12	16 ^h 99 ^m	42 [°] 6 [']	54 ^h 75 ^m	63 [°] 2 [']	24 ^h 88 ^m	49 [°] 1 [']	40 ^h 35 ^m	4 [°] 8 [']	42 ^h 78 ^m	55 [°] 1 [']
13	17 ^h 85 ^m	42 [°] 7 [']	54 ^h 97 ^m	62 [°] 9 [']	24 ^h 67 ^m	49 [°] 4 [']	40 ^h 53 ^m	5 [°] 1 [']	42 ^h 42 ^m	55 [°] 4 [']
14	18 ^h 66 ^m	42 [°] 8 [']	55 ^h 17 ^m	62 [°] 6 [']	24 ^h 46 ^m	49 [°] 7 [']	40 ^h 57 ^m	5 [°] 4 [']	42 ^h 10 ^m	55 [°] 8 [']
15	19 ^h 49 ^m	42 [°] 9 [']	55 ^h 34 ^m	62 [°] 3 [']	24 ^h 27 ^m	49 [°] 9 [']	40 ^h 47 ^m	5 [°] 8 [']	41 ^h 83 ^m	56 [°] 1 [']
16	20 ^h 34 ^m	43 [°] 0 [']	55 ^h 50 ^m	62 [°] 0 [']	24 ^h 09 ^m	50 [°] 2 [']	40 ^h 24 ^m	6 [°] 1 [']	41 ^h 60 ^m	56 [°] 5 [']
17	21 ^h 25 ^m	43 [°] 1 [']	55 ^h 66 ^m	61 [°] 7 [']	23 ^h 92 ^m	50 [°] 5 [']	39 ^h 93 ^m	6 [°] 4 [']	41 ^h 40 ^m	56 [°] 8 [']
18	22 ^h 20 ^m	43 [°] 2 [']	55 ^h 83 ^m	61 [°] 5 [']	23 ^h 74 ^m	50 [°] 8 [']	39 ^h 58 ^m	6 [°] 7 [']	41 ^h 19 ^m	57 [°] 1 [']
19	23 ^h 20 ^m	43 [°] 3 [']	56 ^h 02 ^m	61 [°] 2 [']	23 ^h 54 ^m	51 [°] 1 [']	39 ^h 26 ^m	7 [°] 0 [']	40 ^h 96 ^m	57 [°] 4 [']
20	24 ^h 23 ^m	43 [°] 5 [']	56 ^h 25 ^m	60 [°] 9 [']	23 ^h 32 ^m	51 [°] 3 [']	38 ^h 97 ^m	7 [°] 3 [']	40 ^h 69 ^m	57 [°] 7 [']
21	25 ^h 27 ^m	43 [°] 7 [']	56 ^h 50 ^m	60 [°] 6 [']	23 ^h 08 ^m	51 [°] 6 [']	38 ^h 71 ^m	7 [°] 6 [']	40 ^h 36 ^m	58 [°] 1 [']
22	26 ^h 30 ^m	43 [°] 8 [']	56 ^h 77 ^m	60 [°] 3 [']	22 ^h 82 ^m	51 [°] 8 [']	38 ^h 51 ^m	7 [°] 9 [']	39 ^h 96 ^m	58 [°] 4 [']
23	27 ^h 32 ^m	44 [°] 0 [']	57 ^h 07 ^m	60 [°] 0 [']	22 ^h 55 ^m	52 [°] 1 [']	38 ^h 34 ^m	8 [°] 2 [']	39 ^h 47 ^m	58 [°] 7 [']
24	28 ^h 30 ^m	44 [°] 1 [']	57 ^h 39 ^m	59 [°] 7 [']	22 ^h 27 ^m	52 [°] 3 [']	38 ^h 18 ^m	8 [°] 5 [']	38 ^h 93 ^m	59 [°] 0 [']
25	29 ^h 23 ^m	44 [°] 3 [']	57 ^h 71 ^m	59 [°] 5 [']	21 ^h 98 ^m	52 [°] 6 [']	38 ^h 02 ^m	8 [°] 8 [']	38 ^h 33 ^m	59 [°] 3 [']
26	30 ^h 11 ^m	44 [°] 5 [']	58 ^h 03 ^m	59 [°] 2 [']	21 ^h 69 ^m	52 [°] 8 [']	37 ^h 82 ^m	9 [°] 1 [']	37 ^h 72 ^m	59 [°] 6 [']
27	30 ^h 94 ^m	44 [°] 6 [']	58 ^h 35 ^m	59 [°] 0 [']	21 ^h 41 ^m	53 [°] 1 [']	37 ^h 54 ^m	9 [°] 4 [']	37 ^h 11 ^m	59 [°] 9 [']
28	31 ^h 75 ^m	44 [°] 8 [']	58 ^h 65 ^m	58 [°] 7 [']	21 ^h 14 ^m	53 [°] 3 [']	37 ^h 16 ^m	9 [°] 7 [']	36 ^h 52 ^m	60 [°] 2 [']
29	32 ^h 54 ^m	44 [°] 9 [']	58 ^h 93 ^m	58 [°] 4 [']	20 ^h 87 ^m	53 [°] 6 [']	36 ^h 68 ^m	10 [°] 0 [']	35 ^h 96 ^m	60 [°] 5 [']
30	33 ^h 33 ^m	45 [°] 1 [']	59 ^h 19 ^m	58 [°] 1 [']	20 ^h 61 ^m	53 [°] 8 [']	36 ^h 09 ^m	10 [°] 3 [']	35 ^h 43 ^m	60 [°] 8 [']
31	34 ^h 15 ^m	45 [°] 3 [']	59 ^h 45 ^m	57 [°] 8 [']	20 ^h 35 ^m	54 [°] 1 [']	35 ^h 40 ^m	10 [°] 6 [']	34 ^h 93 ^m	61 [°] 1 [']
Aug. 1	35 ^h 01 ^m	45 [°] 4 [']	59 ^h 72 ^m	57 [°] 6 [']	20 ^h 09 ^m	54 [°] 3 [']	34 ^h 67 ^m	10 [°] 9 [']	34 ^h 45 ^m	61 [°] 4 [']
2	35 ^h 92 ^m	45 [°] 6 [']	59 ^h 99 ^m	57 [°] 3 [']	19 ^h 83 ^m	54 [°] 5 [']	33 ^h 90 ^m	11 [°] 2 [']	33 ^h 97 ^m	61 [°] 7 [']
3	36 ^h 87 ^m	45 [°] 8 [']	60 ^h 28 ^m	57 [°] 1 [']	19 ^h 56 ^m	54 [°] 7 [']	33 ^h 13 ^m	11 [°] 5 [']	33 ^h 46 ^m	62 [°] 0 [']
4	37 ^h 85 ^m	46 [°] 0 [']	60 ^h 61 ^m	56 [°] 8 [']	19 ^h 27 ^m	54 [°] 9 [']	32 ^h 43 ^m	11 [°] 8 [']	32 ^h 88 ^m	62 [°] 3 [']
5	38 ^h 84 ^m	46 [°] 2 [']	60 ^h 96 ^m	56 [°] 6 [']	18 ^h 95 ^m	55 [°] 1 [']	31 ^h 78 ^m	12 [°] 1 [']	32 ^h 23 ^m	62 [°] 6 [']
6	39 ^h 82 ^m	46 [°] 4 [']	61 ^h 35 ^m	56 [°] 3 [']	18 ^h 62 ^m	55 [°] 4 [']	31 ^h 20 ^m	12 [°] 4 [']	31 ^h 49 ^m	62 [°] 9 [']
7	40 ^h 73 ^m	46 [°] 6 [']	61 ^h 76 ^m	56 [°] 1 [']	18 ^h 26 ^m	55 [°] 6 [']	30 ^h 68 ^m	12 [°] 7 [']	30 ^h 67 ^m	63 [°] 2 [']
8	41 ^h 57 ^m	46 [°] 8 [']	62 ^h 18 ^m	55 [°] 8 [']	17 ^h 90 ^m	55 [°] 8 [']	30 ^h 14 ^m	13 [°] 0 [']	29 ^h 80 ^m	63 [°] 5 [']
9	42 ^h 34 ^m	47 [°] 1 [']	62 ^h 59 ^m	55 [°] 6 [']	17 ^h 54 ^m	56 [°] 0 [']	29 ^h 56 ^m	13 [°] 2 [']	28 ^h 92 ^m	63 [°] 8 [']
10	43 ^h 05 ^m	47 [°] 3 [']	62 ^h 97 ^m	55 [°] 4 [']	17 ^h 19 ^m	56 [°] 2 [']	28 ^h 88 ^m	13 [°] 5 [']	28 ^h 06 ^m	64 [°] 1 [']
11	43 ^h 74 ^m	47 [°] 6 [']	63 ^h 33 ^m	55 [°] 1 [']	16 ^h 87 ^m	56 [°] 4 [']	28 ^h 06 ^m	13 [°] 7 [']	27 ^h 25 ^m	64 [°] 4 [']
12	44 ^h 43 ^m	47 [°] 8 [']	63 ^h 67 ^m	54 [°] 9 [']	16 ^h 55 ^m	56 [°] 6 [']	27 ^h 11 ^m	14 [°] 0 [']	26 ^h 50 ^m	64 [°] 7 [']
13	45 ^h 16 ^m	48 [°] 1 [']	63 ^h 99 ^m	54 [°] 6 [']	16 ^h 25 ^m	56 [°] 8 [']	26 ^h 04 ^m	14 [°] 2 [']	25 ^h 79 ^m	65 [°] 0 [']
14	45 ^h 95 ^m	48 [°] 3 [']	64 ^h 32 ^m	54 [°] 4 [']	15 ^h 94 ^m	57 [°] 0 [']	24 ^h 93 ^m	14 [°] 5 [']	25 ^h 10 ^m	65 [°] 2 [']
15	46 ^h 78 ^m	48 [°] 6 [']	64 ^h 68 ^m	54 [°] 2 [']	15 ^h 63 ^m	57 [°] 2 [']	23 ^h 83 ^m	14 [°] 7 [']	24 ^h 39 ^m	65 [°] 5 [']
16	47 ^h 64 ^m	48 [°] 8 [']	65 ^h 05 ^m	53 [°] 9 [']	15 ^h 29 ^m	57 [°] 3 [']	22 ^h 75 ^m	15 [°] 0 [']	23 ^h 64 ^m	65 [°] 8 [']
17	48 ^h 52 ^m	49 [°] 1 [']	65 ^h 45 ^m	53 [°] 7 [']	14 ^h 94 ^m	57 [°] 5 [']	21 ^h 72 ^m	15 [°] 2 [']	22 ^h 83 ^m	66 [°] 1 [']
18	49 ^h 39 ^m	49 [°] 3 [']	65 ^h 87 ^m	53 [°] 5 [']	14 ^h 57 ^m	57 [°] 6 [']	20 ^h 73 ^m	15 [°] 5 [']	21 ^h 95 ^m	66 [°] 4 [']

14 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ursæ Min. (Polaris)		Cephei 51 (Hev.).		δ Ursæ Min.		σ Octantis.		λ Ursæ Min.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h I ^m 18	[°] 88 ['] 42	^h 6 ^m 48	[°] 87 ['] 12	^h 18 ^m 7	[°] 86 ['] 36	^h 18 ^m 41	[°] 89 ['] 16	^h 19 ^m 34	[°] 88 ['] 58
Aug. 19	50° 24	49° 6	6° 32	53° 3	74° 19	57° 8	79° 80	15° 7	81° 02	6° 6
20	51° 04	49° 8	6° 78	53° 1	73° 79	57° 9	78° 90	15° 9	80° 03	6° 9
21	51° 81	50° 1	7° 25	52° 9	73° 39	58° 1	77° 99	16° 2	78° 99	7° 1
22	52° 52	50° 4	7° 73	52° 7	72° 99	58° 2	77° 06	16° 4	77° 92	7° 4
23	53° 18	50° 7	8° 20	52° 5	72° 59	58° 4	76° 09	16° 6	76° 84	7° 6
24	53° 79	51° 0	8° 65	52° 3	72° 20	58° 5	75° 04	16° 8	75° 77	7° 9
25	54° 38	51° 3	9° 09	52° 1	71° 82	58° 6	73° 90	17° 0	74° 74	8° 2
26	54° 96	51° 6	9° 51	51° 9	71° 46	58° 8	72° 65	17° 3	73° 74	8° 4
27	55° 55	51° 9	9° 91	51° 7	71° 10	58° 9	71° 31	17° 5	72° 79	8° 7
28	56° 18	52° 2	10° 31	51° 5	70° 74	59° 1	69° 89	17° 7	71° 86	8° 9
29	56° 85	52° 5	10° 70	51° 4	70° 39	59° 2	68° 45	17° 9	70° 95	9° 2
30	57° 56	52° 8	11° 12	51° 2	70° 03	59° 3	67° 00	18° 1	70° 01	9° 4
31	58° 31	53° 1	11° 57	51° 1	69° 64	59° 5	65° 61	18° 3	69° 04	9° 7
Sept. 1	59° 07	53° 4	12° 05	50° 9	69° 23	59° 6	64° 30	18° 5	67° 98	9° 9
2	59° 80	53° 7	12° 57	50° 8	68° 81	59° 7	63° 07	18° 7	66° 84	10° 1
3	60° 47	54° 1	13° 10	50° 6	68° 38	59° 8	61° 90	18° 8	65° 63	10° 3
4	61° 09	54° 4	13° 64	50° 5	67° 94	59° 9	60° 73	18° 9	64° 37	10° 5
5	61° 62	54° 7	14° 17	50° 3	67° 49	60° 0	59° 56	19° 1	63° 08	10° 8
6	62° 10	55° 0	14° 69	50° 2	67° 06	60° 1	58° 33	19° 2	61° 82	11° 0
7	62° 53	55° 4	15° 18	50° 0	66° 64	60° 2	56° 97	19° 4	60° 59	11° 2
8	62° 95	55° 7	15° 64	49° 9	66° 25	60° 2	55° 50	19° 5	59° 43	11° 4
9	63° 40	56° 0	16° 08	49° 7	65° 87	60° 3	53° 92	19° 7	58° 33	11° 6
10	63° 87	56° 4	16° 52	49° 6	65° 49	60° 3	52° 27	19° 8	57° 25	11° 8
11	64° 40	56° 7	16° 97	49° 5	65° 10	60° 4	50° 59	19° 9	56° 17	12° 0
12	64° 97	57° 1	17° 43	49° 4	64° 71	60° 4	48° 95	20° 0	55° 07	12° 2
13	65° 56	57° 4	17° 93	49° 3	64° 30	60° 5	47° 37	20° 1	53° 93	12° 3
14	66° 15	57° 7	18° 44	49° 2	63° 87	60° 5	45° 86	20° 3	52° 72	12° 5
15	66° 72	58° 1	18° 98	49° 1	63° 44	60° 6	44° 42	20° 4	51° 46	12° 7
16	67° 25	58° 4	19° 54	49° 0	62° 99	60° 6	43° 03	20° 5	50° 13	12° 9
17	67° 73	58° 8	20° 11	48° 9	62° 53	60° 6	41° 67	20° 6	48° 77	13° 1
18	68° 15	59° 1	20° 68	48° 8	62° 07	60° 7	40° 30	20° 7	47° 38	13° 2
19	68° 52	59° 5	21° 24	48° 7	61° 61	60° 7	38° 90	20° 8	45° 99	13° 4
20	68° 84	59° 8	21° 78	48° 6	61° 16	60° 7	37° 44	20° 9	44° 60	13° 5
21	69° 12	60° 2	22° 30	48° 5	60° 73	60° 7	35° 91	21° 0	43° 24	13° 7
22	69° 37	60° 5	22° 81	48° 4	60° 31	60° 7	34° 31	21° 1	41° 92	13° 8
23	69° 63	60° 9	23° 30	48° 4	59° 90	60° 7	32° 61	21° 1	40° 63	14° 0
24	69° 91	61° 3	23° 78	48° 3	59° 50	60° 7	30° 84	21° 2	39° 40	14° 1
25	70° 23	61° 6	24° 25	48° 3	59° 11	60° 7	29° 04	21° 2	38° 20	14° 3
26	70° 59	62° 0	24° 73	48° 2	58° 72	60° 7	27° 25	21° 2	37° 00	14° 4
27	71° 00	62° 4	25° 24	48° 2	58° 31	60° 7	25° 52	21° 3	35° 76	14° 6
28	71° 42	62° 8	25° 77	48° 1	57° 88	60° 7	23° 86	21° 3	34° 47	14° 7
29	71° 82	63° 2	26° 33	48° 1	57° 43	60° 6	22° 31	21° 3	33° 10	14° 8
30	72° 18	63° 5	26° 92	48° 0	56° 97	60° 6	20° 83	21° 3	31° 66	14° 9
Oct. 1	72° 47	63° 9	27° 52	48° 0	56° 50	60° 6	19° 42	21° 3	30° 16	15° 0
2	72° 67	64° 3	28° 11	48° 0	56° 03	60° 5	18° 01	21° 3	28° 64	15° 1
3	72° 81	64° 7	28° 69	47° 9	55° 58	60° 5	16° 56	21° 3	27° 13	15° 2

APPARENT PLACES OF STARS, 1889. 31

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Ursæ Min. (Polaris)		Cephei 51 (Hév.).		δ Ursæ Min.		σ Octantis.		λ Ursæ Min.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h ^m 1 19	[°] ['] 88 43	^h ^m 6 48	[°] ['] 87 12	^h ^m 18 7	[°] ['] 86 36	^h ^m 18 40	[°] ['] 89 16	^h ^m 19 33	[°] ['] 88 58
Oct. 4	12 ^h 01 ^m	5 [°] 1 [']	29 ^h 23 ^m	47 [°] 9 [']	55 ^h 14 ^m	60 [°] 4 [']	75 ^h 02 ^m	21 [°] 3 [']	85 ^h 67 ^m	15 [°] 3 [']
5	12 ^h 08 ^m	5 [°] 4 [']	29 ^h 75 ^m	47 [°] 9 [']	54 ^h 72 ^m	60 [°] 4 [']	73 ^h 39 ^m	21 [°] 3 [']	84 ^h 26 ^m	15 [°] 4 [']
6	13 ^h 05 ^m	5 [°] 8 [']	30 ^h 24 ^m	47 [°] 9 [']	54 ^h 31 ^m	60 [°] 3 [']	71 ^h 66 ^m	21 [°] 3 [']	82 ^h 91 ^m	15 [°] 5 [']
7	13 ^h 15 ^m	6 [°] 2 [']	30 ^h 72 ^m	47 [°] 9 [']	53 ^h 93 ^m	60 [°] 3 [']	69 ^h 87 ^m	21 [°] 3 [']	81 ^h 63 ^m	15 [°] 6 [']
8	13 ^h 28 ^m	6 [°] 6 [']	31 ^h 20 ^m	47 [°] 9 [']	53 ^h 55 ^m	60 [°] 2 [']	68 ^h 05 ^m	21 [°] 3 [']	80 ^h 36 ^m	15 [°] 6 [']
9	13 ^h 45 ^m	7 [°] 0 [']	31 ^h 69 ^m	47 [°] 9 [']	53 ^h 16 ^m	60 [°] 2 [']	66 ^h 26 ^m	21 [°] 2 [']	79 ^h 09 ^m	15 [°] 7 [']
10	13 ^h 66 ^m	7 [°] 3 [']	32 ^h 21 ^m	48 [°] 0 [']	52 ^h 76 ^m	60 [°] 1 [']	64 ^h 53 ^m	21 [°] 2 [']	77 ^h 78 ^m	15 [°] 7 [']
11	13 ^h 88 ^m	7 [°] 7 [']	32 ^h 75 ^m	48 [°] 0 [']	52 ^h 34 ^m	60 [°] 0 [']	62 ^h 89 ^m	21 [°] 2 [']	76 ^h 43 ^m	15 [°] 8 [']
12	14 ^h 08 ^m	8 [°] 1 [']	33 ^h 31 ^m	48 [°] 0 [']	51 ^h 91 ^m	59 [°] 9 [']	61 ^h 32 ^m	21 [°] 1 [']	75 ^h 03 ^m	15 [°] 8 [']
13	14 ^h 25 ^m	8 [°] 5 [']	33 ^h 89 ^m	48 [°] 0 [']	51 ^h 46 ^m	59 [°] 8 [']	59 ^h 84 ^m	21 [°] 1 [']	73 ^h 57 ^m	15 [°] 9 [']
14	14 ^h 37 ^m	8 [°] 9 [']	34 ^h 48 ^m	48 [°] 1 [']	51 ^h 01 ^m	59 [°] 7 [']	58 ^h 42 ^m	21 [°] 0 [']	72 ^h 06 ^m	15 [°] 9 [']
15	14 ^h 43 ^m	9 [°] 3 [']	35 ^h 07 ^m	48 [°] 1 [']	50 ^h 57 ^m	59 [°] 6 [']	57 ^h 03 ^m	21 [°] 0 [']	70 ^h 53 ^m	16 [°] 0 [']
16	14 ^h 43 ^m	9 [°] 7 [']	35 ^h 64 ^m	48 [°] 1 [']	50 ^h 13 ^m	59 [°] 5 [']	55 ^h 63 ^m	20 [°] 9 [']	68 ^h 99 ^m	16 [°] 0 [']
17	14 ^h 37 ^m	10 [°] 1 [']	36 ^h 20 ^m	48 [°] 2 [']	49 ^h 70 ^m	59 [°] 4 [']	54 ^h 21 ^m	20 [°] 8 [']	67 ^h 47 ^m	16 [°] 0 [']
18	14 ^h 27 ^m	10 [°] 5 [']	36 ^h 74 ^m	48 [°] 2 [']	49 ^h 28 ^m	59 [°] 2 [']	52 ^h 73 ^m	20 [°] 7 [']	65 ^h 97 ^m	16 [°] 1 [']
19	14 ^h 15 ^m	10 [°] 9 [']	37 ^h 27 ^m	48 [°] 3 [']	48 ^h 88 ^m	59 [°] 1 [']	51 ^h 19 ^m	20 [°] 6 [']	64 ^h 52 ^m	16 [°] 1 [']
20	14 ^h 00 ^m	11 [°] 2 [']	37 ^h 76 ^m	48 [°] 3 [']	48 ^h 49 ^m	58 [°] 9 [']	49 ^h 59 ^m	20 [°] 5 [']	63 ^h 12 ^m	16 [°] 1 [']
21	13 ^h 87 ^m	11 [°] 6 [']	38 ^h 24 ^m	48 [°] 4 [']	48 ^h 12 ^m	58 [°] 8 [']	47 ^h 92 ^m	20 [°] 4 [']	61 ^h 77 ^m	16 [°] 1 [']
22	13 ^h 77 ^m	12 [°] 0 [']	38 ^h 72 ^m	48 [°] 4 [']	47 ^h 76 ^m	58 [°] 6 [']	46 ^h 23 ^m	20 [°] 3 [']	60 ^h 47 ^m	16 [°] 1 [']
23	13 ^h 71 ^m	12 [°] 4 [']	39 ^h 19 ^m	48 [°] 5 [']	47 ^h 39 ^m	58 [°] 5 [']	44 ^h 54 ^m	20 [°] 2 [']	59 ^h 18 ^m	16 [°] 1 [']
24	13 ^h 70 ^m	12 [°] 8 [']	39 ^h 67 ^m	48 [°] 6 [']	47 ^h 03 ^m	58 [°] 3 [']	42 ^h 90 ^m	20 [°] 1 [']	57 ^h 89 ^m	16 [°] 1 [']
25	13 ^h 71 ^m	13 [°] 1 [']	40 ^h 18 ^m	48 [°] 7 [']	46 ^h 65 ^m	58 [°] 2 [']	41 ^h 33 ^m	19 [°] 9 [']	56 ^h 57 ^m	16 [°] 1 [']
26	13 ^h 72 ^m	13 [°] 5 [']	40 ^h 72 ^m	48 [°] 8 [']	46 ^h 25 ^m	58 [°] 0 [']	39 ^h 89 ^m	19 [°] 8 [']	55 ^h 18 ^m	16 [°] 1 [']
27	13 ^h 70 ^m	13 [°] 9 [']	41 ^h 28 ^m	48 [°] 9 [']	45 ^h 84 ^m	57 [°] 9 [']	38 ^h 56 ^m	19 [°] 6 [']	53 ^h 72 ^m	16 [°] 0 [']
28	13 ^h 60 ^m	14 [°] 3 [']	41 ^h 85 ^m	49 [°] 0 [']	45 ^h 42 ^m	57 [°] 7 [']	37 ^h 33 ^m	19 [°] 5 [']	52 ^h 21 ^m	16 [°] 0 [']
29	13 ^h 43 ^m	14 [°] 7 [']	42 ^h 42 ^m	49 [°] 1 [']	45 ^h 00 ^m	57 [°] 5 [']	36 ^h 13 ^m	19 [°] 3 [']	50 ^h 67 ^m	16 [°] 0 [']
30	13 ^h 17 ^m	15 [°] 0 [']	42 ^h 08 ^m	49 [°] 2 [']	44 ^h 60 ^m	57 [°] 3 [']	34 ^h 93 ^m	19 [°] 2 [']	49 ^h 13 ^m	15 [°] 9 [']
31	12 ^h 87 ^m	15 [°] 4 [']	43 ^h 50 ^m	49 [°] 3 [']	44 ^h 21 ^m	57 [°] 1 [']	33 ^h 67 ^m	19 [°] 0 [']	47 ^h 63 ^m	15 [°] 9 [']
Nov. 1	12 ^h 53 ^m	15 [°] 8 [']	43 ^h 99 ^m	49 [°] 4 [']	43 ^h 84 ^m	56 [°] 9 [']	32 ^h 33 ^m	18 [°] 8 [']	46 ^h 20 ^m	15 [°] 8 [']
2	12 ^h 18 ^m	16 [°] 2 [']	44 ^h 46 ^m	49 [°] 6 [']	43 ^h 49 ^m	56 [°] 7 [']	30 ^h 91 ^m	18 [°] 6 [']	44 ^h 83 ^m	15 [°] 8 [']
3	11 ^h 85 ^m	16 [°] 6 [']	44 ^h 90 ^m	49 [°] 7 [']	43 ^h 16 ^m	56 [°] 5 [']	29 ^h 44 ^m	18 [°] 4 [']	43 ^h 53 ^m	15 [°] 7 [']
4	11 ^h 55 ^m	16 [°] 9 [']	45 ^h 33 ^m	49 [°] 9 [']	42 ^h 84 ^m	56 [°] 3 [']	27 ^h 95 ^m	18 [°] 2 [']	42 ^h 29 ^m	15 [°] 7 [']
5	11 ^h 30 ^m	17 [°] 3 [']	45 ^h 77 ^m	50 [°] 0 [']	42 ^h 53 ^m	56 [°] 1 [']	26 ^h 46 ^m	18 [°] 0 [']	41 ^h 05 ^m	15 [°] 6 [']
6	11 ^h 08 ^m	17 [°] 6 [']	46 ^h 23 ^m	50 [°] 2 [']	42 ^h 20 ^m	55 [°] 9 [']	25 ^h 05 ^m	17 [°] 8 [']	39 ^h 80 ^m	15 [°] 6 [']
7	10 ^h 87 ^m	18 [°] 0 [']	46 ^h 70 ^m	50 [°] 3 [']	41 ^h 86 ^m	55 [°] 7 [']	23 ^h 74 ^m	17 [°] 6 [']	38 ^h 51 ^m	15 [°] 5 [']
8	10 ^h 66 ^m	18 [°] 4 [']	47 ^h 19 ^m	50 [°] 5 [']	41 ^h 51 ^m	55 [°] 5 [']	22 ^h 53 ^m	17 [°] 4 [']	37 ^h 19 ^m	15 [°] 4 [']
9	10 ^h 43 ^m	18 [°] 7 [']	47 ^h 69 ^m	50 [°] 6 [']	41 ^h 15 ^m	55 [°] 3 [']	21 ^h 43 ^m	17 [°] 2 [']	35 ^h 83 ^m	15 [°] 3 [']
10	10 ^h 15 ^m	19 [°] 1 [']	48 ^h 21 ^m	50 [°] 8 [']	40 ^h 79 ^m	55 [°] 1 [']	20 ^h 41 ^m	17 [°] 0 [']	34 ^h 41 ^m	15 [°] 2 [']
11	9 ^h 82 ^m	19 [°] 4 [']	48 ^h 73 ^m	50 [°] 9 [']	40 ^h 43 ^m	54 [°] 9 [']	19 ^h 44 ^m	16 [°] 8 [']	32 ^h 97 ^m	15 [°] 1 [']
12	9 ^h 42 ^m	19 [°] 8 [']	49 ^h 24 ^m	51 [°] 1 [']	40 ^h 07 ^m	54 [°] 6 [']	18 ^h 48 ^m	16 [°] 5 [']	31 ^h 53 ^m	15 [°] 0 [']
13	8 ^h 97 ^m	20 [°] 1 [']	49 ^h 73 ^m	51 [°] 3 [']	39 ^h 72 ^m	54 [°] 4 [']	17 ^h 51 ^m	16 [°] 3 [']	30 ^h 09 ^m	14 [°] 9 [']
14	8 ^h 48 ^m	20 [°] 5 [']	50 ^h 20 ^m	51 [°] 4 [']	39 ^h 40 ^m	54 [°] 1 [']	16 ^h 53 ^m	16 [°] 1 [']	28 ^h 70 ^m	14 [°] 7 [']
15	7 ^h 94 ^m	20 [°] 8 [']	50 ^h 65 ^m	51 [°] 6 [']	39 ^h 09 ^m	53 [°] 9 [']	15 ^h 51 ^m	15 [°] 9 [']	27 ^h 35 ^m	14 [°] 6 [']
16	7 ^h 38 ^m	21 [°] 2 [']	51 ^h 08 ^m	51 [°] 8 [']	38 ^h 79 ^m	53 [°] 6 [']	14 ^h 45 ^m	15 [°] 7 [']	26 ^h 06 ^m	14 [°] 4 [']
17	6 ^h 82 ^m	21 [°] 5 [']	51 ^h 48 ^m	52 [°] 0 [']	38 ^h 52 ^m	53 [°] 4 [']	13 ^h 33 ^m	15 [°] 4 [']	24 ^h 84 ^m	14 [°] 3 [']
18	6 ^h 30 ^m	21 [°] 8 [']	51 ^h 86 ^m	52 [°] 2 [']	38 ^h 26 ^m	53 [°] 1 [']	12 ^h 19 ^m	15 [°] 2 [']	23 ^h 68 ^m	14 [°] 1 [']

316 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.										
Month and Day.	α Ursæ Min. (Polaris)		Cephei 51 (Hev.).		δ Ursæ Min.		ϵ Octantis.		λ Ursæ Min.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h ^m ^s 1 18 88 43	^h ^m ^s 6 48 87 12	^h ^m ^s 18 7 86 36	^h ^m ^s 18 39 89 16	^h ^m ^s 19 32 88 58					
Nov. 19	65° 80	22° 2	52° 24	52° 4	38° 01	52° 8	71° 05	14° 9	82° 55	14° 0
20	65° 34	22° 5	52° 62	52° 6	37° 75	52° 6	69° 95	14° 7	81° 43	13° 8
21	64° 93	22° 8	53° 01	52° 8	37° 49	52° 3	68° 93	14° 4	80° 31	13° 7
22	64° 52	23° 1	53° 42	53° 0	37° 21	52° 0	68° 01	14° 2	79° 14	13° 5
23	64° 10	23° 4	53° 86	53° 2	36° 92	51° 7	67° 24	13° 9	77° 91	13° 3
24	63° 63	23° 7	54° 31	53° 5	36° 63	51° 4	66° 59	13° 7	76° 62	13° 2
25	63° 09	24° 0	54° 77	53° 7	36° 33	51° 1	66° 03	13° 4	75° 29	13° 0
26	62° 47	24° 3	55° 22	54° 0	36° 04	50° 8	65° 49	13° 1	73° 97	12° 9
27	61° 77	24° 6	55° 64	54° 2	35° 77	50° 6	64° 92	12° 8	72° 69	12° 7
28	61° 02	24° 9	56° 02	54° 5	35° 52	50° 3	64° 29	12° 5	71° 48	12° 5
29	60° 27	25° 2	56° 36	54° 7	35° 30	50° 0	63° 59	12° 2	70° 36	12° 3
30	59° 53	25° 5	56° 68	55° 0	35° 09	49° 7	62° 82	11° 9	69° 31	12° 1
Dec. 1	58° 84	25° 8	56° 98	55° 2	34° 91	49° 4	62° 02	11° 6	68° 31	11° 9
2	58° 19	26° 0	57° 27	55° 5	34° 73	49° 1	61° 26	11° 3	67° 35	11° 7
3	57° 56	26° 3	57° 58	55° 8	34° 55	48° 8	60° 55	11° 0	66° 40	11° 5
4	56° 97	26° 6	57° 90	56° 0	34° 36	48° 5	59° 94	10° 7	65° 43	11° 3
5	56° 38	26° 9	58° 23	56° 3	34° 16	48° 2	59° 44	10° 4	64° 44	11° 1
6	55° 77	27° 2	58° 59	56° 5	33° 95	47° 9	59° 06	10° 1	63° 40	10° 9
7	55° 13	27° 4	58° 95	56° 8	33° 74	47° 5	58° 78	9° 8	62° 34	10° 6
8	54° 44	27° 7	59° 31	57° 1	33° 53	47° 2	58° 56	9° 5	61° 25	10° 4
9	53° 69	27° 9	59° 66	57° 3	33° 32	46° 8	58° 41	9° 2	60° 17	10° 1
10	52° 90	28° 2	60° 00	57° 6	33° 12	46° 5	58° 25	8° 9	59° 09	9° 9
11	52° 04	28° 4	60° 32	57° 9	32° 95	46° 1	58° 09	8° 6	58° 05	9° 6
12	51° 15	28° 6	60° 60	58° 2	32° 79	45° 8	57° 90	8° 2	57° 06	9° 4
13	50° 24	28° 9	60° 86	58° 5	32° 66	45° 5	57° 68	7° 9	56° 14	9° 1
14	49° 33	29° 1	61° 09	58° 8	32° 54	45° 1	57° 41	7° 6	55° 28	8° 9
15	48° 44	29° 3	61° 30	59° 1	32° 44	44° 8	57° 12	7° 3	54° 49	8° 6
16	47° 58	29° 5	61° 49	59° 4	32° 35	44° 4	56° 82	7° 0	53° 76	8° 4
17	46° 78	29° 7	61° 68	59° 7	32° 27	44° 1	56° 55	6° 6	53° 06	8° 1
18	46° 01	29° 9	61° 88	60° 0	32° 20	43° 8	56° 35	6° 3	52° 37	7° 8
19	45° 27	30° 1	62° 09	60° 3	32° 11	43° 4	56° 25	6° 0	51° 67	7° 5
20	44° 55	30° 3	62° 32	60° 6	32° 01	43° 1	56° 28	5° 7	50° 92	7° 2
21	43° 80	30° 5	62° 58	60° 9	31° 90	42° 8	56° 44	5° 4	50° 12	7° 0
22	42° 97	30° 6	62° 85	61° 2	31° 78	42° 4	56° 72	5° 0	49° 28	6° 7
23	42° 07	30° 8	63° 10	61° 5	31° 58	41° 8	57° 06	4° 7	48° 43	6° 4
24	41° 10	30° 9	63° 32	61° 8	31° 50	41° 4	57° 42	4° 3	47° 61	6° 1
25	40° 08	31° 1	63° 51	62° 1	31° 45	41° 1	57° 72	4° 0	46° 85	5° 8
26	39° 03	31° 2	63° 67	62° 4	31° 42	40° 7	57° 94	3° 6	46° 18	5° 5
27	38° 00	31° 4	63° 78	62° 8	31° 42	40° 4	58° 09	3° 3	45° 59	5° 2
28	37° 01	31° 5	63° 87	63° 1	31° 43	40° 0	58° 21	2° 9	45° 10	4° 9
29	36° 06	31° 7	63° 96	63° 4	31° 44	39° 7	58° 33	2° 6	44° 66	4° 5
30	35° 15	31° 8	64° 04	63° 8	31° 45	39° 3	58° 44	2° 3	44° 25	4° 1
31	34° 29	31° 9	64° 14	64° 1	31° 44	39° 0	59° 19	1° 7	43° 83	3° 7
32	33° 44	32° 0	64° 25	64° 4	31° 43	38° 6	59° 69	1° 4	43° 40	3° 3

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Andromedæ.		γ Pegasi. (Algenib)		δ Ceti.		β Hydri.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	^h ° ^m 2	[°] 28 28 [']	^h ° ^m 7	[°] 14 33 [']	^h ° ^m 13	[°] 9 26 [']	^h ° ^m 19	[°] 77 52 [']
Jan. 1	37° 89	41° 4	30° 08	56° 1	45° 08	33° 1	52° 02	73° 4
11	37° 75	40° 4	29° 96	55° 2	44° 97	33° 6	51° 14	72° 2
21	37° 61	39° 1	29° 85	54° 2	44° 86	34° 0	50° 33	70° 4
31	37° 49	37° 6	29° 74	53° 2	44° 76	34° 2	49° 61	68° 2
Feb. 10	37° 39	36° 0	29° 65	52° 1	44° 68	34° 3	49° 00	65° 5
20	37° 31	34° 4	29° 59	51° 1	44° 62	34° 1	48° 51	62° 3
Mar. 2	37° 26	32° 7	29° 56	50° 1	44° 59	33° 7	48° 16	58° 9
12	37° 26	31° 2	29° 55	49° 3	44° 59	33° 0	47° 95	55° 3
22	37° 30	29° 7	29° 59	48° 7	44° 61	32° 1	47° 89	51° 5
Apr. 1	37° 39	28° 5	29° 68	48° 4	44° 69	30° 9	48° 01	47° 3
11	37° 52	27° 7	29° 80	48° 4	44° 80	29° 6	48° 30	43° 5
21	37° 70	27° 3	29° 96	48° 6	44° 95	28° 0	48° 74	39° 8
May 1	37° 92	27° 2	30° 16	49° 1	45° 15	26° 2	49° 33	36° 3
11	38° 18	27° 4	30° 40	50° 1	45° 38	24° 3	50° 05	33° 1
21	38° 47	28° 1	30° 67	51° 3	45° 64	22° 2	50° 90	30° 2
31	38° 79	29° 2	30° 96	52° 8	45° 92	20° 1	51° 86	27° 7
June 10	39° 13	30° 6	31° 27	54° 5	46° 22	18° 0	52° 90	25° 7
20	39° 47	32° 3	31° 59	56° 4	46° 54	15° 9	54° 00	24° 2
30	39° 80	34° 3	31° 91	58° 5	46° 86	13° 9	55° 14	23° 2
July 10	40° 13	36° 5	32° 22	60° 6	47° 17	12° 0	56° 28	22° 8
20	40° 44	38° 9	32° 52	62° 8	47° 47	10° 3	57° 39	22° 9
30	40° 72	41° 4	32° 79	64° 9	47° 75	8° 9	58° 44	23° 6
Aug. 9	40° 97	43° 9	33° 03	67° 0	48° 00	7° 7	59° 40	24° 9
19	41° 19	46° 4	33° 24	69° 0	48° 21	6° 7	60° 25	26° 7
29	41° 36	48° 8	33° 42	70° 8	48° 39	6° 1	60° 95	28° 9
Sept. 8	41° 49	51° 2	33° 55	72° 4	48° 54	5° 8	61° 48	31° 5
18	41° 59	53° 4	33° 64	73° 9	48° 65	5° 8	61° 84	34° 4
28	41° 64	55° 4	33° 70	75° 1	48° 71	6° 1	62° 00	37° 4
Oct. 8	41° 65	57° 1	33° 73	76° 1	48° 74	6° 5	61° 97	40° 5
18	41° 63	58° 7	33° 72	76° 8	48° 74	7° 2	61° 76	43° 5
28	41° 58	60° 0	33° 68	77° 4	48° 71	7° 9	61° 37	46° 3
Nov. 7	41° 51	61° 0	33° 62	77° 7	48° 65	8° 8	60° 82	48° 8
17	41° 41	61° 7	33° 54	77° 8	48° 58	9° 7	60° 13	50° 8
27	41° 29	62° 1	33° 45	77° 7	48° 49	10° 6	59° 34	52° 4
Dec. 7	41° 16	62° 1	33° 34	77° 3	48° 38	11° 5	58° 47	53° 4
17	41° 02	61° 8	33° 23	76° 8	48° 27	12° 3	57° 56	53° 8
27	40° 88	61° 3	33° 11	76° 2	48° 16	13° 0	56° 65	53° 6
37	40° 74	60° 4	32° 99	75° 4	48° 05	13° 6	55° 74	52° 7

18 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	12 Ceti.			α Cassiopeiae.			β Ceti.			δ Piscium.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	h m o /			h m o /			h m o /			h m o /		
	0 24 4 33			0 34 55 55			0 37 18 35			0 42 6 58		
Jan. 1	21° 31' 84° 0' 6			11° 83' 51° 5' 5			59° 96' 59° 9' 5			54° 42' 44° 8' 7		
11	21° 20' 84° 6' 6			11° 53' 51° 0' 5			59° 83' 60° 4' 5			54° 30' 44° 1' 8		
21	21° 09' 85° 2' 6			11° 24' 49° 9' 11			59° 71' 60° 6' 2			54° 18' 43° 3' 8		
31	20° 98' 85° 6' 4			10° 96' 48° 4' 15			59° 59' 60° 5' 1			54° 07' 42° 6' 7		
Feb. 10	20° 89' 85° 8' 2			10° 71' 46° 6' 25			59° 49' 60° 1' 10			53° 96' 41° 9' 7		
20	20° 82' 85° 9' 1			10° 50' 44° 4' 22			59° 40' 59° 5' 6			53° 87' 41° 3' 6		
Mar. 2	20° 78' 85° 8' 1			10° 34' 41° 9' 25			59° 34' 58° 6' 9			53° 81' 40° 8' 5		
12	20° 77' 85° 4' 4			10° 24' 39° 4' 25			59° 31' 57° 5' 11			53° 78' 40° 5' 3		
	20° 79' 84° 8' 6			10° 21' 36° 9' 25			59° 32' 56° 1' 14			53° 78' 40° 4' 1		
Apr. 1	20° 85' 83° 9' 9			10° 26' 34° 2' 27			59° 37' 54° 3' 18			53° 82' 40° 5' 1		
11	20° 95' 82° 8' 11			10° 39' 31° 9' 23			59° 46' 52° 4' 19			53° 91' 40° 9' 4		
21	21° 10' 81° 5' 13			10° 59' 30° 0' 19			59° 59' 50° 3' 21			54° 04' 41° 6' 7		
May 1	21° 28' 80° 0' 15			10° 85' 28° 5' 15			59° 76' 48° 1' 17			54° 21' 42° 5' 9		
11	21° 50' 78° 2' 18			11° 18' 27° 4' 11			59° 97' 45° 8' 21			54° 42' 43° 7' 12		
21	21° 75' 76° 3' 19			11° 57' 26° 7' 7			60° 22' 43° 4' 25			54° 66' 45° 1' 14		
31	22° 03' 74° 3' 20			11° 99' 26° 6' 1			60° 50' 41° 0' 28			54° 93' 46° 7' 16		
June 10	22° 33' 72° 3' 30			12° 45' 26° 9' 3			60° 80' 38° 6' 30			55° 22' 48° 5' 18		
20	22° 64' 70° 2' 31			12° 92' 27° 7' 8			61° 12' 36° 4' 32			55° 53' 50° 5' 20		
30	22° 96' 68° 1' 32			13° 40' 29° 1' 14			61° 45' 34° 4' 33			55° 85' 52° 5' 20		
July 10	23° 27' 66° 2' 31			13° 87' 30° 9' 18			61° 77' 32° 5' 32			56° 16' 54° 5' 20		
20	23° 56' 64° 4' 29			14° 32' 33° 0' 21			62° 09' 31° 0' 32			56° 46' 56° 5' 20		
30	23° 84' 62° 7' 28			14° 73' 35° 5' 25			62° 39' 29° 7' 30			56° 75' 58° 4' 19		
Aug. 9	24° 10' 61° 3' 26			15° 10' 38° 2' 27			62° 66' 28° 8' 27			57° 01' 60° 2' 18		
19	24° 32' 60° 2' 22			15° 43' 41° 2' 30			62° 90' 28° 2' 24			57° 25' 61° 9' 17		
Sept. 29	24° 51' 59° 3' 19			15° 71' 44° 4' 28			63° 11' 28° 0' 21			57° 45' 63° 3' 14		
8	24° 66' 58° 7' 15			15° 93' 47° 6' 32			63° 28' 28° 2' 17			57° 62' 64° 5' 12		
18	24° 77' 58° 4' 11			16° 10' 50° 8' 17			63° 41' 28° 7' 13			57° 75' 65° 5' 10		
28	24° 85' 58° 3' 8			16° 21' 54° 1' 11			63° 51' 29° 4' 10			57° 84' 66° 3' 8		
Oct. 8	24° 89' 58° 5' 4			16° 26' 57° 2' 5			63° 56' 30° 4' 5			57° 90' 66° 8' 5		
18	24° 90' 58° 9' 1			16° 25' 60° 1' 29			63° 58' 31° 6' 2			57° 93' 67° 2' 4		
28	24° 88' 59° 4' 2			16° 19' 62° 9' 28			63° 57' 32° 9' 1			57° 93' 67° 3' 1		
Nov. 7	24° 84' 60° 0' 4			16° 09' 65° 3' 10			63° 53' 34° 2' 4			57° 91' 67° 2' 1		
17	24° 77' 60° 8' 7			15° 94' 67° 4' 15			63° 46' 35° 5' 7			57° 86' 67° 0' 2		
27	24° 69' 61° 6' 8			15° 75' 69° 1' 19			63° 37' 36° 8' 9			57° 79' 66° 6' 4		
Dec. 7	24° 59' 62° 4' 10			15° 52' 70° 4' 23			63° 27' 38° 0' 10			57° 70' 66° 1' 5		
17	24° 49' 63° 1' 11			15° 26' 71° 2' 26			63° 16' 38° 9' 11			57° 60' 65° 6' 5		
27	24° 38' 63° 9' 11			14° 98' 71° 4' 28			63° 04' 39° 7' 12			57° 50' 65° 0' 6		
37	24° 27' 64° 5' 11			14° 69' 71° 2' 29			62° 91' 40° 3' 13			57° 38' 64° 3' 7		

APPARENT PLACES OF STARS, 1889. 316

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♌ Piscium.			♍ Andromedæ.			♎ Ceti.			♏ Piscium.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	^h 0 ^m 57 ^s 13	[°] 7 ['] 17 ["] 12	[°] 1 ['] 3 ["] 35	^h 1 ^m 3 ^s 58	[°] 1 ['] 3 ["] 58	[°] 1 ['] 18 ["] 8	^h 1 ^m 18 ^s 45	[°] 8 ['] 45 ["] 12	[°] 1 ['] 25 ["] 14	^h 1 ^m 25 ^s 14	[°] 14 ['] 46 ["] 20	[°] 2 ['] 2 ["] 6
Jan. 1	10° 13	25° 9	30° 35	58° 5	27° 72	34° 6	31° 91	20° 2				
11	10° 01	25° 2	30° 19	58° 0	27° 60	35° 3	31° 79	19° 6				
21	9° 89	24° 5	30° 01	57° 2	27° 47	35° 8	31° 65	18° 9				
31	9° 77	23° 8	29° 84	56° 1	27° 34	36° 2	31° 52	18° 1				
Feb. 10	9° 65	23° 1	29° 68	54° 7	27° 22	36° 3	31° 38	17° 3				
20	9° 55	22° 6	29° 53	53° 2	27° 11	36° 2	31° 26	16° 6				
Mar. 2	9° 48	22° 1	29° 42	51° 6	27° 02	35° 9	31° 16	15° 8				
12	9° 43	21° 8	29° 35	49° 9	26° 55	35° 3	31° 09	15° 2				
22	9° 42	21° 7	29° 31	48° 3	26° 51	34° 5	31° 04	14° 6				
Apr. 1	9° 44	21° 8	29° 32	46° 8	26° 51	33° 5	31° 04	14° 3				
11	9° 52	22° 2	29° 40	45° 4	26° 56	32° 1	31° 08	14° 2				
21	9° 63	22° 8	29° 52	44° 4	27° 05	30° 5	31° 17	14° 3				
May 1	9° 79	23° 7	29° 69	43° 7	27° 18	28° 8	31° 30	14° 7				
11	9° 99	24° 8	29° 92	43° 4	27° 36	26° 9	31° 48	15° 4				
21	10° 22	26° 2	30° 19	43° 4	27° 57	24° 8	31° 70	16° 3				
31	10° 48	27° 8	30° 49	43° 8	27° 82	22° 7	31° 96	17° 5				
June 10	10° 77	29° 5	30° 82	44° 6	28° 09	20° 5	32° 24	18° 9				
20	11° 08	31° 4	31° 17	45° 8	28° 39	18° 3	32° 54	20° 5				
30	11° 39	33° 4	31° 53	47° 3	28° 70	16° 1	32° 85	22° 3				
July 10	11° 71	35° 4	31° 89	49° 0	29° 01	14° 1	33° 17	24° 2				
20	12° 02	37° 4	32° 24	51° 0	29° 32	12° 2	33° 49	26° 2				
30	12° 31	39° 3	32° 58	53° 2	29° 62	10° 6	33° 80	28° 1				
Aug. 9	12° 58	41° 2	32° 89	55° 6	29° 91	9° 3	34° 09	30° 0				
19	12° 82	42° 8	33° 17	58° 0	30° 17	8° 2	34° 35	31° 8				
29	13° 03	44° 2	33° 41	60° 4	30° 40	7° 4	34° 59	33° 5				
Sept. 8	13° 21	45° 5	33° 62	62° 9	30° 60	7° 0	34° 80	35° 1				
18	13° 36	46° 5	33° 79	65° 3	30° 76	6° 9	34° 97	36° 4				
28	13° 46	47° 2	33° 92	67° 6	30° 89	7° 0	35° 11	37° 6				
Oct. 8	13° 54	47° 8	34° 01	69° 7	30° 98	7° 4	35° 22	38° 6				
18	13° 58	48° 1	34° 07	71° 7	31° 05	8° 1	35° 29	39° 4				
28	13° 60	48° 2	34° 09	73° 5	31° 08	8° 9	35° 34	40° 0				
Nov. 7	13° 58	48° 2	34° 07	75° 0	31° 08	9° 9	35° 35	40° 4				
17	13° 55	48° 0	34° 02	76° 2	31° 05	10° 9	35° 34	40° 6				
27	13° 49	47° 7	33° 94	77° 2	31° 00	12° 0	35° 30	40° 6				
Dec. 7	13° 41	47° 2	33° 84	77° 9	30° 93	13° 1	35° 24	40° 5				
17	13° 31	46° 7	33° 71	78° 2	30° 85	14° 0	35° 16	40° 2				
27	13° 21	46° 1	33° 57	78° 2	30° 74	14° 9	35° 06	39° 8				
37	13° 10	45° 4	33° 41	77° 9	30° 63	15° 7	34° 94	39° 3				

320 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Eridani. (<i>Achernar</i>)			ν Piscium.			ϵ Piscium.			β Arietis.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h I 33	^m 57	^s 47	^h I 35	^m 4	^s 55	^h I 39	^m 8	^s 35	^h I 48	^m 20	^s 15
Jan. I	34.19	88.1		38.58	24.6		31.32	49.3		29.88	52.0	
II	33.87	88.4	3	38.47	23.9	7	31.20	48.6	7	29.75	51.6	4
21	33.54	88.1	3	38.34	23.3	6	31.06	48.0	6	29.61	51.0	6
31	33.22	87.3	8	38.21	22.7	6	30.93	47.4	6	29.46	50.3	7
			14			5			13			8
Feb. 10	32.91	85.9	18	38.08	22.2	5	30.80	46.8	6	29.31	49.5	9
20	32.63	84.1	18	37.95	21.7	5	30.67	46.2	6	29.17	48.6	9
Mar. 2	32.39	81.8	23	37.85	21.4	3	30.56	45.8	4	29.05	47.8	8
12	32.19	79.1	27	37.77	21.3	1	30.48	45.5	3	28.95	46.9	9
			30			0			5			8
Apr. 22	32.05	76.1	33	37.72	21.3	2	30.43	45.3	2	28.88	46.1	6
I	31.97	72.8	33	37.70	21.5	2	30.41	45.3	2	28.85	45.5	5
11	31.95	69.3	35	37.73	22.0	5	30.43	45.5	6	28.87	45.0	5
21	32.01	65.3	40	37.81	22.8	8	30.51	46.1	12	28.94	44.8	2
			36			9			12			0
May I	32.14	61.7	36	37.93	23.7	12	30.63	46.8	10	29.06	44.8	3
11	32.34	58.1	36	38.09	24.9	12	30.79	47.8	10	29.22	45.1	3
21	32.61	54.6	35	38.30	26.3	14	30.99	49.0	12	29.42	45.7	8
31	32.93	51.4	32	38.54	27.9	16	31.23	50.4	14	29.67	46.5	6
			30			18			16			11
June 10	33.31	48.4	26	38.80	29.7	19	31.50	52.0	18	29.94	47.6	14
20	33.74	45.8	22	39.09	31.6	19	31.79	53.8	18	30.24	49.0	15
30	34.20	43.6	18	39.40	33.5	20	32.10	55.7	19	30.56	50.5	17
July 10	34.68	41.8	12	39.71	35.5	19	32.41	57.6	19	30.89	52.2	18
			10			18			19			18
20	35.17	40.6	7	40.02	37.4	18	32.72	59.5	19	31.22	54.0	19
30	35.65	39.9	1	40.32	39.2	17	33.03	61.4	19	31.53	55.9	19
Aug. 9	36.12	39.8	1	40.61	40.9	15	33.32	63.1	17	31.83	57.8	18
19	36.56	40.3	5	40.88	42.4	14	33.59	64.7	16	32.12	59.6	18
			10			14			15			18
Sept. 29	36.95	41.3	15	41.12	43.8	11	33.83	66.2	13	32.38	61.4	17
8	37.29	42.8	15	41.33	44.9	8	34.05	67.5	13	32.61	63.1	16
18	37.57	44.8	20	41.51	45.7	6	34.23	68.5	10	32.81	64.7	14
28	37.78	47.2	24	41.66	46.3	4	34.38	69.3	8	32.98	66.1	14
			27			4			6			12
Oct. 8	37.93	49.9	29	41.77	46.7	2	34.50	69.9	9	33.11	67.3	11
18	38.00	52.8	29	41.85	46.9	1	34.59	70.3	6	33.22	68.4	9
28	38.00	55.7	28	41.90	46.8	2	34.65	70.5	0	33.29	69.3	7
Nov. 7	37.94	58.5	27	41.92	46.6	3	34.68	70.5	2	33.33	70.0	6
			24			5			3			3
Dec. 17	37.81	61.2	24	41.92	46.3	5	34.68	70.3	3	33.34	70.6	3
27	37.63	63.6	21	41.89	45.8	5	34.65	70.0	3	33.32	70.9	2
7	37.40	65.7	17	41.84	45.3	6	34.60	69.7	5	33.27	71.1	0
17	37.14	67.4	11	41.76	44.7	7	34.53	69.2	5	33.20	71.1	2
			6			6			6			3
27	36.84	68.5	6	41.67	44.0	6	34.44	68.7	6	33.10	70.9	3
37	36.52	69.1	6	41.56	43.4	6	34.33	68.1	6	32.99	70.6	3

APPARENT PLACES OF STARS, 1889. 321

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Arietis.			67 Ceti.			f ^c Ceti.			γ Ceti.		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 2	^m 0	^o 22 56	^h 2 11	^m 6 55		^h 2 22	^m 7 57		^h 2 37	^m 2 45	
Jan. 1	54 ^a .46	12 ^a .2	3	26 ^a .31	73 ^a .8	9	15 ^a .02	37 ^a .1	5	32 ^a .57	54 ^a .1	7
11	54 ^a .33	11 ^a .9	5	26 ^a .19	74 ^a .7	6	14 ^a .91	36 ^a .6	6	32 ^a .46	53 ^a .4	6
21	54 ^a .19	11 ^a .4	6	26 ^a .06	75 ^a .3	5	14 ^a .78	36 ^a .0	6	32 ^a .34	52 ^a .8	5
31	54 ^a .03	10 ^a .8		25 ^a .92	75 ^a .8		14 ^a .64	35 ^a .4		32 ^a .20	52 ^a .3	
Feb. 10	53 ^a .88	10 ^a .0	8	25 ^a .78	76 ^a .0	2	14 ^a .50	34 ^a .9	5	32 ^a .05	51 ^a .8	5
20	53 ^a .73	9 ^a .1	9	25 ^a .64	76 ^a .0	0	14 ^a .35	34 ^a .5	4	31 ^a .90	51 ^a .5	3
Mar. 2	53 ^a .59	8 ^a .2	9	25 ^a .51	75 ^a .9	1	14 ^a .21	34 ^a .1	4	31 ^a .76	51 ^a .3	2
12	53 ^a .48	7 ^a .3	9	25 ^a .40	75 ^a .5	4	14 ^a .10	33 ^a .9	2	31 ^a .63	51 ^a .3	0
22	53 ^a .40	6 ^a .4	9	25 ^a .32	74 ^a .9	6	14 ^a .01	33 ^a .8	1	31 ^a .53	51 ^a .4	1
Apr. 1	53 ^a .36	5 ^a .6	8	25 ^a .27	74 ^a .0	9	13 ^a .95	33 ^a .8	0	31 ^a .46	51 ^a .7	3
11	53 ^a .36	5 ^a .0	6	25 ^a .26	72 ^a .9	11	13 ^a .93	34 ^a .1	3	31 ^a .43	51 ^a .3	6
21	53 ^a .36	4 ^a .4	4	25 ^a .29	71 ^a .6	13	13 ^a .96	34 ^a .6	5	31 ^a .44	51 ^a .3	8
May 1	53 ^a .52	4 ^a .4	2	25 ^a .38	69 ^a .9	17	14 ^a .04	35 ^a .3	7	31 ^a .60	55 ^a .3	9
11	53 ^a .67	4 ^a .5	1	25 ^a .50	68 ^a .1	18	14 ^a .16	36 ^a .3	10	31 ^a .60	55 ^a .3	12
21	53 ^a .87	4 ^a .9	4	25 ^a .67	66 ^a .1	20	14 ^a .33	37 ^a .4	11	31 ^a .75	56 ^a .7	14
31	54 ^a .11	5 ^a .6	7	25 ^a .88	64 ^a .0	21	14 ^a .54	38 ^a .7	13	31 ^a .94	58 ^a .3	16
June 10	54 ^a .39	6 ^a .5	9	26 ^a .12	61 ^a .9	21	14 ^a .78	40 ^a .2	15	32 ^a .17	60 ^a .0	17
20	54 ^a .69	7 ^a .6	11	26 ^a .39	59 ^a .7	22	15 ^a .05	41 ^a .9	17	32 ^a .43	61 ^a .8	18
30	55 ^a .01	9 ^a .0	14	26 ^a .68	57 ^a .6	21	15 ^a .34	43 ^a .7	18	32 ^a .71	63 ^a .7	19
July 10	55 ^a .34	10 ^a .6	16	26 ^a .98	55 ^a .5	21	15 ^a .64	45 ^a .5	18	33 ^a .00	65 ^a .6	19
20	55 ^a .67	12 ^a .3	17	27 ^a .29	53 ^a .6	19	15 ^a .95	47 ^a .3	18	33 ^a .31	67 ^a .4	18
30	55 ^a .99	14 ^a .1	18	27 ^a .60	51 ^a .8	18	16 ^a .26	49 ^a .0	17	33 ^a .61	69 ^a .1	17
Aug. 9	56 ^a .30	16 ^a .0	19	27 ^a .90	50 ^a .3	15	16 ^a .56	50 ^a .7	17	33 ^a .91	70 ^a .7	16
19	56 ^a .60	17 ^a .8	18	28 ^a .18	49 ^a .1	12	16 ^a .85	52 ^a .2	15	34 ^a .20	72 ^a .1	14
29	56 ^a .87	19 ^a .7	19	28 ^a .44	48 ^a .2	9	17 ^a .12	53 ^a .6	14	34 ^a .47	73 ^a .3	13
Sept. 8	57 ^a .12	21 ^a .4	17	28 ^a .67	47 ^a .5	7	17 ^a .36	54 ^a .7	11	34 ^a .73	74 ^a .3	10
18	57 ^a .33	23 ^a .1	17	28 ^a .88	47 ^a .3	0	17 ^a .58	55 ^a .7	10	34 ^a .95	75 ^a .0	7
28	57 ^a .51	24 ^a .6	15	29 ^a .06	47 ^a .3	2	17 ^a .77	56 ^a .4	7	35 ^a .15	75 ^a .4	4
Oct. 8	57 ^a .66	25 ^a .9	13	29 ^a .21	47 ^a .6	3	17 ^a .93	56 ^a .9	5	35 ^a .33	75 ^a .6	2
18	57 ^a .78	27 ^a .1	12	29 ^a .32	48 ^a .2	6	18 ^a .06	57 ^a .2	3	35 ^a .47	75 ^a .5	1
28	57 ^a .87	28 ^a .1	10	29 ^a .41	49 ^a .0	8	18 ^a .17	57 ^a .2	1	35 ^a .58	75 ^a .3	2
Nov. 7	57 ^a .92	29 ^a .0	9	29 ^a .46	50 ^a .0	10	18 ^a .24	57 ^a .1	1	35 ^a .67	74 ^a .8	5
17	57 ^a .94	29 ^a .7	7	29 ^a .48	51 ^a .1	11	18 ^a .28	56 ^a .9	2	35 ^a .72	74 ^a .2	6
27	57 ^a .93	30 ^a .2	5	29 ^a .48	52 ^a .2	11	18 ^a .29	56 ^a .6	3	35 ^a .74	73 ^a .6	6
Dec. 7	57 ^a .90	30 ^a .5	3	29 ^a .45	53 ^a .3	11	18 ^a .27	56 ^a .2	4	35 ^a .74	72 ^a .9	7
17	57 ^a .83	30 ^a .7	3	29 ^a .39	54 ^a .4	10	18 ^a .23	55 ^a .7	5	35 ^a .70	72 ^a .1	7
27	57 ^a .74	30 ^a .6	2	29 ^a .31	55 ^a .4	9	18 ^a .16	55 ^a .2	6	35 ^a .64	71 ^a .4	7
37	57 ^a .63	30 ^a .4	2	29 ^a .21	56 ^a .3	9	18 ^a .06	54 ^a .6	6	35 ^a .55	70 ^a .7	7

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Arietis.			α Ceti.			δ Arietis.			α Persei.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 2 45	^m 14 37	^s 0 56	^h 3 39	^m 3 39	^s 0 56	^h 3 5	^m 19 18	^s 0 56	^h 3 16	^m 49 27	^s 0 56
Jan. 1	21° 53	11	22° 2	28° 36	10	5° 3	16° 74	10	19° 7	24° 11	16	59° 2
11	21° 42	13	21° 8	28° 26	12	4° 7	16° 64	13	19° 5	23° 95	21	60° 2
21	21° 29	14	21° 4	28° 14	14	4° 1	16° 51	15	19° 3	23° 74	24	60° 8
31	21° 15	15	20° 9	28° 00	15	3° 5	16° 36	16	18° 9	23° 50	26	61° 1
Feb. 10	21° 00	16	20° 4	27° 85	16	3° 1	16° 20	16	18° 5	23° 24	27	61° 0
20	20° 84	15	19° 9	27° 69	15	2° 8	16° 04	17	18° 0	22° 97	26	60° 5
Mar. 2	20° 69	14	19° 4	27° 54	14	2° 6	15° 87	15	17° 4	22° 71	25	59° 6
12	20° 55	11	18° 9	27° 40	11	2° 5	15° 72	12	16° 9	22° 46	21	58° 5
22	20° 44	8	18° 5	27° 29	8	2° 6	15° 60	10	16° 4	22° 25	17	57° 1
Apr. 1	20° 36	4	18° 3	27° 20	4	2° 9	15° 50	6	15° 9	22° 08	12	55° 5
11	20° 32	1	18° 2	27° 15	1	3° 4	15° 44	1	15° 6	21° 06	5	53° 8
21	20° 33	6	18° 2	27° 14	6	4° 0	15° 43	4	15° 4	21° 01	3	52° 0
May 1	20° 39	10	18° 5	27° 18	9	4° 9	15° 47	9	15° 3	21° 04	9	50° 3
11	20° 49	15	19° 0	27° 27	14	6° 1	15° 56	13	15° 5	20° 51	17	48° 3
21	20° 64	20	19° 7	27° 41	18	7° 4	15° 69	18	15° 9	22° 21	22	47° 3
31	20° 84	23	20° 6	27° 59	21	8° 9	15° 87	22	16° 5	22° 43	28	46° 1
June 10	21° 07	26	21° 7	27° 80	24	10° 5	16° 09	26	17° 3	22° 71	33	45° 3
20	21° 33	29	23° 0	28° 04	27	12° 3	16° 35	29	18° 3	23° 04	38	44° 7
30	21° 62	31	24° 5	28° 31	29	14° 1	16° 64	30	19° 4	23° 42	41	44° 5
July 10	21° 93	31	26° 0	28° 60	30	15° 9	16° 94	32	20° 7	23° 83	42	44° 6
20	22° 24	31	27° 6	28° 90	31	17° 7	17° 26	32	22° 1	24° 25	44	45° 1
30	22° 55	31	29° 3	29° 21	30	19° 4	17° 58	32	23° 6	24° 69	44	45° 8
Aug. 9	22° 86	30	30° 9	29° 51	29	20° 9	17° 90	32	25° 1	25° 12	43	46° 9
19	23° 16	29	32° 4	29° 80	28	22° 3	18° 21	30	26° 6	25° 55	42	48° 2
29	23° 45	26	33° 8	30° 08	26	23° 5	18° 51	28	28° 0	25° 97	39	49° 8
Sept. 8	23° 71	24	35° 1	30° 34	24	24° 5	18° 79	26	29° 3	26° 36	37	51° 5
18	23° 95	21	36° 3	30° 58	22	25° 2	19° 05	24	30° 5	26° 73	34	53° 4
28	24° 16	19	37° 3	30° 80	19	25° 6	19° 29	20	31° 6	27° 07	31	55° 5
Oct. 8	24° 35	16	38° 1	30° 99	16	25° 8	19° 49	18	32° 6	27° 38	26	57° 7
18	24° 51	13	38° 7	31° 15	14	25° 8	19° 67	16	33° 4	27° 64	23	59° 9
28	24° 64	10	39° 1	31° 29	10	25° 6	19° 83	12	34° 1	27° 87	18	62° 2
Nov. 7	24° 74	6	39° 4	31° 39	8	25° 2	19° 95	9	34° 6	28° 05	13	64° 4
17	24° 80	4	39° 5	31° 47	4	24° 6	20° 04	6	35° 0	28° 18	8	66° 5
27	24° 84	0	39° 5	31° 51	1	23° 9	20° 10	3	35° 3	28° 26	3	68° 6
Dec. 7	24° 84	3	39° 5	31° 52	2	23° 2	20° 13	1	35° 5	28° 29	3	70° 5
17	24° 81	5	39° 3	31° 50	5	22° 5	20° 12	5	35° 6	28° 26	8	72° 2
27	24° 76	9	39° 1	31° 45	8	21° 8	20° 07	8	35° 6	28° 18	11	73° 7
37	24° 67	4	38° 7	31° 37	7	21° 1	19° 99	8	35° 4	28° 05	13	74° 8

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♉ Tauri.		♊ Eridani.		♈ Tauri.		♉ Hydr.	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	^h 3 ^m 18	[°] 8 ['] 38	^h 3 ^m 27	[°] 9 ['] 49	^h 3 ^m 40	[°] 23 ['] 45	^h 3 ^m 48	[°] 74 ['] 34
Jan. 1	50° 35	9° 0	42° 00	75° 9	53° 14	37° 8	61° 29	63° 6
11	50° 26	8° 4	41° 91	77° 0	53° 06	37° 9	60° 62	65° 5
21	50° 15	7° 9	41° 79	77° 9	52° 95	37° 9	59° 87	66° 8
31	50° 01	7° 4	41° 64	78° 6	52° 81	37° 7	59° 06	67° 6
Feb. 10								
20	49° 86	7° 0	41° 48	79° 0	52° 64	37° 5	58° 21	67° 8
Mar. 2	49° 70	6° 7	41° 31	79° 2	52° 46	37° 1	57° 34	67° 4
12	49° 54	6° 4	41° 14	79° 2	52° 28	36° 7	56° 48	66° 4
	49° 39	6° 2	40° 98	78° 9	52° 11	36° 2	55° 65	64° 9
Apr. 22	49° 26	6° 1	40° 84	78° 3	51° 95	35° 7	54° 88	62° 9
1	49° 15	6° 1	40° 72	77° 4	51° 82	35° 1	54° 19	60° 5
11	49° 08	6° 3	40° 64	76° 3	51° 73	34° 6	53° 59	57° 7
21	49° 06	6° 7	40° 59	75° 0	51° 68	34° 2	53° 10	54° 6
May 1	49° 07	7° 3	40° 59	73° 4	51° 68	33° 9	52° 73	51° 2
11	49° 14	8° 1	40° 63	71° 6	51° 73	33° 7	52° 49	47° 7
21	49° 26	9° 1	40° 73	69° 5	51° 84	33° 7	52° 40	43° 7
31	49° 42	10° 2	40° 87	67° 4	52° 00	33° 9	52° 45	40° 0
June 10	49° 62	11° 5	41° 05	65° 2	52° 19	34° 3	52° 65	36° 4
20	49° 86	13° 0	41° 27	62° 9	52° 43	34° 9	52° 99	32° 9
30	50° 12	14° 5	41° 51	60° 7	52° 70	35° 7	53° 45	29° 7
July 10	50° 40	16° 1	41° 78	58° 5	53° 00	36° 6	54° 03	26° 9
20	50° 70	17° 7	42° 07	56° 5	53° 31	37° 7	54° 70	24° 4
30	51° 01	19° 3	42° 36	54° 7	53° 63	38° 8	55° 45	22° 4
Aug. 9	51° 31	20° 8	42° 66	53° 1	53° 96	40° 0	56° 26	21° 0
19	51° 61	22° 2	42° 95	51° 8	54° 28	41° 3	57° 10	20° 2
Sept. 29	51° 90	23° 4	43° 24	50° 8	54° 60	42° 5	57° 95	19° 9
8	52° 18	24° 5	43° 52	50° 2	54° 90	43° 7	58° 78	20° 3
18	52° 43	25° 3	43° 77	50° 0	55° 19	44° 9	59° 57	21° 4
28	52° 67	25° 9	44° 00	50° 1	55° 46	46° 0	60° 29	23° 0
Oct. 8	52° 88	26° 3	44° 21	50° 5	55° 71	46° 9	60° 92	25° 1
18	53° 06	26° 5	44° 40	51° 3	55° 93	47° 8	61° 43	27° 7
28	53° 22	26° 5	44° 56	52° 4	56° 13	48° 6	61° 81	30° 7
Nov. 7	53° 35	26° 3	44° 68	53° 6	56° 29	49° 3	62° 05	33° 9
17	53° 45	26° 0	44° 78	55° 0	56° 42	49° 9	62° 14	37° 2
27	53° 52	25° 6	44° 84	56° 5	56° 52	50° 4	62° 07	40° 5
Dec. 7	53° 55	25° 2	44° 87	58° 0	56° 58	50° 8	61° 86	43° 6
17	53° 55	24° 7	44° 86	59° 4	56° 60	51° 1	61° 50	46° 5
27	53° 52	24° 2	44° 82	60° 7	56° 59	51° 4	61° 00	49° 1
37	53° 45	23° 6	44° 74	62° 0	56° 56	51° 5	60° 39	51° 3

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	γ Eridani.		A Tauri.		ϵ Eridani.		γ Tauri.	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h 3 ^m 52	[°] 13 ['] 49	^h 3 ^m 58	[°] 21 ['] 46	^h 4 ^m 6	[°] 7 ['] 7	^h 4 ^m 13	[°] 15 ['] 21
Jan. 1	51 ^a .12	41 ^a .5	7 ^a .97	36 ^a .6	26 ^a .92	48 ^a .5	28 ^a .67	27 ^a .7
11	51 ^a .04	42 ^a .8	7 ^a .91	36 ^a .7	26 ^a .85	49 ^a .7	28 ^a .62	27 ^a .5
21	50 ^a .92	43 ^a .9	7 ^a .81	36 ^a .6	26 ^a .76	50 ^a .7	28 ^a .53	27 ^a .2
31	50 ^a .78	44 ^a .8	7 ^a .67	36 ^a .5	26 ^a .63	51 ^a .5	28 ^a .41	27 ^a .0
Feb. 10	50 ^a .62	45 ^a .4	7 ^a .51	36 ^a .3	26 ^a .48	52 ^a .0	28 ^a .26	26 ^a .7
20	50 ^a .45	45 ^a .6	7 ^a .34	36 ^a .1	26 ^a .31	52 ^a .3	28 ^a .10	26 ^a .5
Mar. 2	50 ^a .27	45 ^a .6	7 ^a .16	35 ^a .7	26 ^a .13	52 ^a .4	27 ^a .92	26 ^a .2
12	50 ^a .09	45 ^a .3	6 ^a .98	35 ^a .3	25 ^a .96	52 ^a .3	27 ^a .75	26 ^a .0
Apr. 22	49 ^a .93	44 ^a .7	6 ^a .82	34 ^a .9	25 ^a .80	51 ^a .9	27 ^a .59	25 ^a .8
1	49 ^a .79	43 ^a .8	6 ^a .69	34 ^a .5	25 ^a .66	51 ^a .3	27 ^a .44	25 ^a .6
11	49 ^a .68	42 ^a .6	6 ^a .58	34 ^a .1	25 ^a .55	50 ^a .4	27 ^a .33	25 ^a .6
21	49 ^a .62	41 ^a .1	6 ^a .51	33 ^a .8	25 ^a .47	49 ^a .3	27 ^a .26	25 ^a .6
May 1	49 ^a .59	39 ^a .4	6 ^a .50	33 ^a .6	25 ^a .44	48 ^a .0	27 ^a .23	25 ^a .7
11	49 ^a .61	37 ^a .5	6 ^a .53	33 ^a .6	25 ^a .45	46 ^a .5	27 ^a .25	26 ^a .0
21	49 ^a .68	35 ^a .2	6 ^a .62	33 ^a .7	25 ^a .51	44 ^a .7	27 ^a .31	26 ^a .5
31	49 ^a .79	32 ^a .9	6 ^a .76	33 ^a .9	25 ^a .62	42 ^a .6	27 ^a .43	27 ^a .1
June 10	49 ^a .95	30 ^a .5	6 ^a .94	34 ^a .3	25 ^a .77	40 ^a .6	27 ^a .59	27 ^a .9
20	50 ^a .14	28 ^a .1	7 ^a .16	34 ^a .9	25 ^a .95	38 ^a .6	27 ^a .79	28 ^a .8
30	50 ^a .37	25 ^a .8	7 ^a .41	35 ^a .7	26 ^a .17	36 ^a .5	28 ^a .02	29 ^a .8
July 10	50 ^a .63	23 ^a .5	7 ^a .69	36 ^a .6	26 ^a .42	34 ^a .4	28 ^a .28	30 ^a .9
20	50 ^a .90	21 ^a .4	7 ^a .99	37 ^a .7	26 ^a .69	32 ^a .4	28 ^a .56	32 ^a .0
30	51 ^a .19	19 ^a .5	8 ^a .30	38 ^a .8	26 ^a .97	30 ^a .6	28 ^a .86	33 ^a .2
Aug. 9	51 ^a .49	17 ^a .8	8 ^a .62	39 ^a .9	27 ^a .26	29 ^a .0	29 ^a .17	34 ^a .4
19	51 ^a .79	16 ^a .5	8 ^a .94	41 ^a .0	27 ^a .55	27 ^a .7	29 ^a .48	35 ^a .5
Sept. 29	52 ^a .08	15 ^a .6	9 ^a .26	42 ^a .1	27 ^a .85	26 ^a .7	29 ^a .78	36 ^a .6
8	52 ^a .37	15 ^a .0	9 ^a .57	43 ^a .2	28 ^a .13	26 ^a .0	30 ^a .08	37 ^a .5
18	52 ^a .64	14 ^a .8	9 ^a .86	44 ^a .2	28 ^a .40	25 ^a .6	30 ^a .37	38 ^a .3
28	52 ^a .89	15 ^a .0	10 ^a .14	45 ^a .1	28 ^a .66	25 ^a .6	30 ^a .65	38 ^a .9
Oct. 8	53 ^a .12	15 ^a .6	10 ^a .40	45 ^a .9	28 ^a .90	26 ^a .0	30 ^a .91	39 ^a .4
18	53 ^a .33	16 ^a .6	10 ^a .63	46 ^a .6	29 ^a .12	26 ^a .7	31 ^a .14	39 ^a .7
28	53 ^a .51	17 ^a .9	10 ^a .84	47 ^a .2	29 ^a .31	27 ^a .6	31 ^a .35	39 ^a .9
Nov. 7	53 ^a .66	19 ^a .4	11 ^a .02	47 ^a .7	29 ^a .48	28 ^a .7	31 ^a .55	40 ^a .0
17	53 ^a .78	21 ^a .0	11 ^a .17	48 ^a .1	29 ^a .61	30 ^a .0	31 ^a .71	40 ^a .0
27	53 ^a .87	22 ^a .8	11 ^a .29	48 ^a .4	29 ^a .71	31 ^a .4	31 ^a .83	39 ^a .9
Dec. 7	53 ^a .92	24 ^a .6	11 ^a .37	48 ^a .7	29 ^a .78	32 ^a .9	31 ^a .92	39 ^a .7
17	53 ^a .93	26 ^a .3	11 ^a .40	48 ^a .9	29 ^a .81	34 ^a .3	31 ^a .98	39 ^a .5
27	53 ^a .90	27 ^a .9	11 ^a .40	49 ^a .1	29 ^a .81	35 ^a .7	31 ^a .99	39 ^a .3
37	53 ^a .83	29 ^a .3	11 ^a .36	49 ^a .2	29 ^a .77	37 ^a .0	31 ^a .96	39 ^a .0

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Tauri.		α Tauri. (Aldebaran)		μ Eridani.		ι Aurigæ.	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	^h 4 ^m 22 ^s 18	[°] 55 ['] 55 ["] 55	^h 4 ^m 29 ^s 16	[°] 17 ['] 16 ["] 17	^h 4 ^m 39 ^s 3	[°] 27 ['] 3 ["] 27	^h 4 ^m 49 ^s 32	[°] 59 ['] 32 ["] 59
Jan. 1	8.17	56.6	33.20	3.3	57.38	39.4	46.08	20.7
11	8.12	56.5	33.17	3.1	57.34	40.5	46.05	21.4
21	8.04	56.4	33.09	2.9	57.27	41.5	45.98	22.0
31	7.92	56.3	32.97	2.7	57.16	42.3	45.86	22.5
Feb. 10	7.77	56.2	32.83	2.5	57.02	42.9	45.70	22.8
20	7.60	56.0	32.66	2.3	56.85	43.3	45.51	23.0
Mar. 2	7.42	55.8	32.49	2.1	56.68	43.5	45.31	23.0
12	7.24	55.5	32.31	1.9	56.50	43.5	45.10	22.8
Apr. 22	7.07	55.3	32.14	1.7	56.33	43.3	44.90	22.4
1	6.92	55.0	31.99	1.6	56.18	42.9	44.72	21.9
11	6.80	54.8	31.87	1.5	56.05	42.2	44.56	21.3
21	6.72	54.7	31.78	1.5	55.95	41.4	44.44	20.7
May 1	6.69	54.6	31.73	1.6	55.89	40.3	44.37	20.0
11	6.70	54.7	31.74	1.8	55.87	39.0	44.35	19.3
21	6.75	54.9	31.79	2.2	55.90	37.6	44.39	18.6
31	6.87	55.3	31.89	2.7	55.98	36.0	44.48	18.1
June 10	7.03	55.8	32.04	3.3	56.10	34.1	44.63	17.7
20	7.22	56.5	32.23	4.1	56.26	32.3	44.82	17.4
30	7.45	57.3	32.45	5.0	56.46	30.5	45.05	17.3
July 10	7.71	58.2	32.70	6.0	56.68	28.6	45.32	17.3
20	7.99	59.2	32.97	7.0	56.93	26.8	45.61	17.5
30	8.29	60.2	33.26	8.1	57.20	25.1	45.93	17.9
Aug. 9	8.60	61.2	33.56	9.2	57.48	23.6	46.27	18.3
19	8.91	62.3	33.87	10.2	57.77	22.3	46.61	18.9
29	9.23	63.3	34.18	11.2	58.06	21.3	46.96	19.5
Sept. 8	9.54	64.2	34.49	12.0	58.35	20.6	47.31	20.2
18	9.83	65.0	34.78	12.7	58.63	20.2	47.65	20.9
28	10.12	65.6	35.06	13.3	58.90	20.1	47.98	21.7
Oct. 8	10.39	66.2	35.33	13.7	59.16	20.3	48.30	22.5
18	10.64	66.6	35.58	14.0	59.40	20.8	48.60	23.3
28	10.86	67.0	35.81	14.1	59.62	21.6	48.88	24.1
Nov. 7	11.06	67.2	36.02	14.2	59.82	22.6	49.13	24.9
17	11.24	67.4	36.20	14.2	59.99	23.8	49.36	25.8
27	11.38	67.5	36.34	14.1	60.13	25.1	49.55	26.7
Dec. 7	11.48	67.5	36.45	14.0	60.23	26.5	49.69	27.5
17	11.54	67.5	36.52	13.8	60.30	27.9	49.79	28.4
27	11.56	67.5	36.55	13.6	60.32	29.1	49.85	29.2
37	11.54	67.5	36.53	13.4	60.31	30.3	49.85	29.9

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Leporis.			α Aurigæ. (Capella)			β Orionis. (Rigel)			β Tauri.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	^h 5	^m 0	[°] 22	^h 5	^m 8	[°] 45	^h 5	^m 9	[°] 8	^h 5	^m 19	[°] 28
			['] 30			['] 52			['] 19			['] 30
Jan. 1	46.23	84.6		29.80	61.9		12.53	57.9		16.81	43.0	
11	46.18	86.6	20	29.78	63.3	14	12.51	59.4	15	16.81	43.4	4
21	46.09	88.3	17	29.69	64.6	13	12.45	60.7	13	16.77	43.9	5
31	45.96	89.7	14	29.55	65.6	10	12.35	61.7	10	16.68	44.3	4
			16			9			8			3
Feb. 10	45.80	90.8	11	29.37	66.5	9	12.22	62.5	8	16.55	44.6	3
			18			5			6			2
20	45.62	91.5	7	29.15	67.0	5	12.06	63.1	6	16.38	44.8	2
Mar. 2	45.42	91.8	3	28.90	67.3	3	11.88	63.4	3	16.19	45.0	0
			20			1			0			0
12	45.22	91.8	0	28.64	67.2	1	11.70	63.4	0	15.99	45.0	0
			4			3			2			2
Apr. 22	45.02	91.4	4	28.38	66.9	3	11.52	63.2	2	15.79	44.8	2
			20			6			4			2
1	44.83	90.6	8	28.14	66.3	6	11.34	62.8	4	15.60	44.6	2
			19			9			7			3
11	44.66	89.5	11	27.94	65.4	9	11.19	62.1	7	15.44	44.3	3
			17			11			9			4
21	44.52	88.0	15	27.78	64.3	11	11.07	61.2	9	15.31	43.9	4
			10			12			12			4
May 1	44.42	86.3	17	27.67	63.1	12	10.99	60.0	12	15.22	43.5	4
			20			12			14			4
11	44.37	84.3	20	27.62	61.9	12	10.94	58.6	14	15.18	43.1	4
			23			13			16			4
21	44.36	82.0	23	27.62	60.6	13	10.94	57.0	16	15.18	42.7	4
			25			13			18			3
31	44.39	79.5	25	27.70	59.3	13	10.98	55.2	18	15.24	42.4	3
			28			13			21			3
June 10	44.48	76.7	28	27.85	58.0	13	11.08	53.1	21	15.21	42.1	3
			15			11			20			1
20	44.61	74.1	26	28.04	56.9	11	11.21	51.1	20	15.51	42.0	1
			26			9			20			0
30	44.78	71.4	27	28.29	56.0	9	11.37	49.1	20	15.71	42.0	0
July 10	44.98	68.8	26	28.58	55.2	8	11.57	47.1	20	15.94	42.1	1
			23			5			19			1
20	45.21	66.4	24	28.91	54.7	5	11.80	45.2	19	16.20	42.2	1
			33			4			18			3
30	45.47	64.2	22	29.27	54.3	4	12.05	43.4	18	16.49	42.5	3
Aug. 9	45.74	62.3	19	29.65	54.1	2	12.32	41.8	16	16.79	42.9	4
			16			1			14			4
19	46.03	60.7	19	30.05	54.2	1	12.59	40.4	14	17.11	43.3	4
			30			2			29			4
Sept. 29	46.33	59.5	12	30.46	54.4	2	12.88	39.3	11	17.44	43.7	4
			27			9			4			4
8	46.63	58.8	7	30.87	54.8	4	13.17	38.6	7	17.78	44.2	5
			30			6			0			4
18	46.93	58.5	3	31.29	55.4	6	13.45	38.2	4	18.11	44.6	4
			29			7			0			5
28	47.22	58.7	2	31.69	56.1	7	13.73	38.2	0	18.44	45.1	5
			7			9			4			4
Oct. 8	47.49	59.4	7	32.08	57.0	9	14.01	38.6	4	18.76	45.5	4
			27			11			7			4
18	47.75	60.6	12	32.45	58.1	11	14.27	39.3	7	19.07	45.9	4
			18			12			10			4
28	47.99	62.2	16	32.80	59.3	12	14.51	40.3	10	19.36	46.3	4
Nov. 7	48.20	64.1	19	33.12	60.5	12	14.73	41.6	13	19.63	46.7	4
			21			14			15			4
17	48.38	66.2	21	33.41	61.9	14	14.92	43.1	15	19.87	47.1	4
			28			15			17			5
27	48.53	68.5	23	33.65	63.4	15	15.08	44.8	17	20.08	47.6	5
Dec. 7	48.64	70.9	24	33.84	65.0	16	15.21	46.5	17	20.26	48.0	4
			24			15			17			5
17	48.71	73.3	24	33.98	66.5	15	15.30	48.2	17	20.39	48.5	5
			23			16			16			5
27	48.74	75.6	23	34.06	68.1	16	15.35	49.8	16	20.47	49.0	5
			20			15			15			5
37	48.72	77.6	20	34.08	69.6	15	15.35	51.3	15	20.51	49.5	5

APPARENT PLACES OF STARS, 1889. 327

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	δ Orionis.			α Leporis.			ε Orionis.			α Columbae.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.	
	^h 5	^m 26	^o 22	^h 5	^m 27	^o 17	^h 5	^m 30	^o 16	^h 5	^m 35	^o 7
Jan. 1	20° 47'	62° 1'		50° 56'	78° 3'		35° 15'	31° 0'		38° 72'	71° 4'	
11	20° 47'	63° 2'	11	50° 54'	80° 3'	20	35° 16'	32° 2'	12	38° 68'	74° 0'	26
21	20° 43'	64° 2'	10	50° 48'	82° 0'	17	35° 12'	33° 2'	10	38° 59'	76° 3'	23
31	20° 35'	65° 0'	8	50° 38'	83° 5'	15	35° 04'	34° 1'	9	38° 46'	78° 3'	20
Feb. 10			7			14			12			16
20	20° 23'	65° 7'	4	50° 24'	84° 6'	8	34° 92'	34° 7'	5	38° 28'	79° 9'	11
Mar. 2	20° 09'	66° 1'	3	50° 08'	85° 4'	5	34° 77'	35° 2'	3	38° 07'	81° 0'	7
12	19° 92'	66° 4'	1	49° 90'	85° 9'	2	34° 61'	35° 5'	1	37° 84'	81° 7'	2
	19° 74'	66° 5'		49° 70'	86° 1'		34° 43'	35° 6'		37° 60'	81° 9'	
Apr. 22	19° 56'	66° 4'	3	49° 50'	85° 9'	5	34° 25'	35° 5'	3	37° 36'	81° 7'	6
1	19° 39'	66° 1'	5	49° 31'	85° 4'	9	34° 08'	35° 2'	4	37° 12'	81° 1'	11
11	19° 24'	65° 6'	6	49° 14'	84° 5'	12	33° 93'	34° 8'	7	36° 90'	80° 0'	15
21	19° 11'	65° 0'	8	48° 99'	83° 3'	14	33° 80'	34° 1'	8	36° 71'	78° 5'	18
May 1	19° 02'	64° 2'	10	48° 88'	81° 9'	17	33° 70'	33° 3'	10	36° 56'	76° 7'	22
11	18° 97'	63° 2'	11	48° 81'	80° 2'	20	33° 64'	32° 3'	12	36° 45'	74° 5'	25
21	18° 96'	62° 1'	13	48° 78'	78° 2'	21	33° 63'	31° 1'	13	36° 38'	72° 0'	27
31	18° 99'	60° 8'	14	48° 80'	76° 1'	23	33° 67'	29° 8'	15	36° 36'	69° 3'	29
June 10	19° 07'	59° 4'	17	48° 85'	73° 8'	26	33° 74'	28° 3'	17	36° 39'	66° 4'	33
20	19° 20'	57° 7'	16	48° 96'	71° 2'	24	33° 86'	26° 6'	16	36° 48'	63° 1'	30
30	19° 36'	56° 1'	16	49° 11'	68° 8'	24	34° 01'	25° 0'	16	36° 61'	60° 1'	28
July 10	19° 55'	54° 5'	16	49° 29'	66° 4'	23	34° 19'	23° 4'	16	36° 77'	57° 2'	25
20	19° 77'	52° 9'	14	49° 50'	64° 1'	21	34° 41'	21° 8'	15	36° 98'	54° 4'	26
30	20° 01'	51° 5'	13	49° 74'	62° 0'	19	34° 65'	20° 3'	14	37° 22'	51° 8'	23
Aug. 9	20° 27'	50° 2'	12	49° 99'	60° 1'	16	34° 90'	18° 9'	12	37° 49'	49° 5'	19
19	20° 54'	49° 0'	10	50° 27'	58° 5'	12	35° 17'	17° 7'	9	37° 78'	47° 6'	14
Sept. 29	20° 82'	48° 0'	7	50° 55'	57° 3'	8	35° 45'	16° 8'	7	38° 08'	46° 2'	10
8	21° 11'	47° 3'	4	50° 84'	56° 5'	4	35° 74'	16° 1'	4	38° 40'	45° 2'	2
18	21° 40'	46° 9'	1	51° 13'	56° 1'	1	36° 02'	15° 7'	1	38° 72'	44° 8'	2
28	21° 68'	46° 8'	28	51° 42'	56° 2'	5	36° 31'	15° 6'	2	39° 04'	45° 0'	7
Oct. 8	21° 96'	47° 0'	5	51° 70'	56° 7'	10	36° 59'	15° 8'	5	39° 35'	45° 7'	13
18	22° 23'	47° 5'	8	51° 97'	57° 7'	13	36° 86'	16° 3'	8	39° 64'	47° 0'	17
28	22° 48'	48° 3'	10	52° 23'	59° 0'	17	37° 12'	17° 1'	11	39° 92'	48° 7'	22
Nov. 7	22° 72'	49° 3'	11	52° 47'	60° 7'	20	37° 36'	18° 2'	12	40° 18'	50° 9'	25
17	22° 93'	50° 4'	13	52° 67'	62° 7'	21	37° 57'	19° 4'	13	40° 40'	53° 4'	28
27	23° 11'	51° 7'	13	52° 85'	64° 8'	22	37° 76'	20° 7'	14	40° 58'	56° 2'	29
Dec. 7	23° 26'	53° 0'	13	52° 99'	67° 0'	23	37° 91'	22° 1'	14	40° 72'	59° 1'	29
17	23° 38'	54° 3'	13	53° 09'	69° 3'	22	38° 03'	23° 4'	13	40° 81'	62° 0'	29
27	23° 45'	55° 6'	11	53° 15'	71° 5'	20	38° 11'	24° 7'	13	40° 85'	64° 9'	27
37	23° 48'	56° 7'	11	53° 16'	73° 5'	20	38° 14'	26° 0'	13	40° 85'	67° 6'	27

328 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	κ Orionis.			α Orionis.			ν Orionis.			γ Gemminorum.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s 5 42 9 42			^h ^m ^s 5 49 7 23			^h ^m ^s 6 1 14 46			^h ^m ^s 6 8 22 32		
Jan. 1	29° 95	42° 2	16	10° 05	3° 1	8	14° 40	47° 5	3	10° 94	13° 3	1
11	29° 96	43° 8	15	10° 07	2° 3	6	14° 44	47° 2	3	10° 99	13° 4	1
21	29° 92	45° 3	12	10° 05	1° 7	5	14° 43	46° 9	2	10° 99	13° 6	1
31	29° 84	46° 5	10	9° 99	1° 2	4	14° 38	46° 7	1	10° 94	13° 8	1
Feb. 10	29° 73	47° 5	8	9° 89	0° 8	3	14° 29	46° 6	0	10° 85	14° 1	3
20	29° 58	48° 3	4	9° 75	0° 5	2	14° 16	46° 6	0	10° 72	14° 4	3
Mar. 2	29° 40	48° 7	2	9° 59	0° 3	0	14° 00	46° 6	1	10° 56	14° 6	1
12	29° 22	48° 9	1	9° 42	0° 3	0	13° 82	46° 7	1	10° 38	14° 8	1
22	29° 03	48° 8	3	9° 24	0° 3	2	13° 64	46° 8	1	10° 19	14° 9	1
Apr. 1	28° 85	48° 5	6	9° 06	0° 5	2	13° 46	46° 9	1	10° 00	15° 0	0
11	28° 69	47° 9	9	8° 90	0° 7	4	13° 30	47° 0	2	9° 83	15° 0	0
21	28° 55	47° 0	11	8° 77	1° 1	5	13° 16	47° 2	2	9° 68	15° 0	0
May 1	28° 44	45° 9	13	8° 67	1° 6	6	13° 05	47° 4	3	9° 56	15° 0	0
11	28° 37	44° 6	16	8° 60	2° 2	7	12° 98	47° 7	3	9° 48	14° 9	0
21	28° 34	43° 0	17	8° 58	2° 9	8	12° 95	48° 0	4	9° 44	14° 9	0
31	28° 35	41° 3	19	8° 60	3° 7	10	12° 96	48° 4	5	9° 45	14° 9	0
June 10	28° 40	39° 4	21	8° 66	4° 7	11	13° 01	48° 9	6	9° 51	14° 9	1
20	28° 50	37° 3	20	8° 77	5° 8	11	13° 11	49° 5	6	9° 60	15° 0	1
30	28° 64	35° 3	20	8° 92	6° 9	11	13° 26	50° 1	7	9° 75	15° 1	1
July 10	28° 81	33° 3	19	9° 10	8° 0	11	13° 44	50° 8	7	9° 93	15° 3	1
20	29° 01	31° 4	18	9° 31	9° 1	11	13° 64	51° 5	7	10° 14	15° 5	3
30	29° 23	29° 6	17	9° 54	10° 2	11	13° 87	52° 2	6	10° 38	15° 8	3
Aug. 9	29° 48	27° 9	14	9° 79	11° 2	10	14° 13	52° 8	6	10° 64	16° 1	1
19	29° 75	26° 5	11	10° 06	12° 1	9	14° 40	53° 4	4	10° 92	16° 3	1
29	30° 02	25° 4	8	10° 34	12° 8	5	14° 68	53° 8	4	11° 21	16° 5	1
Sept. 8	30° 30	24° 6	4	10° 63	13° 3	3	14° 98	54° 2	2	11° 52	16° 7	1
18	30° 59	24° 2	0	10° 92	13° 6	1	15° 28	54° 4	1	11° 84	16° 8	0
28	30° 88	24° 2	4	11° 21	13° 7	1	15° 58	54° 5	1	12° 15	16° 8	1
Oct. 8	31° 16	24° 6	7	11° 50	13° 6	4	15° 88	54° 4	3	12° 47	16° 7	1
18	31° 43	25° 3	11	11° 79	13° 2	5	16° 18	54° 1	4	12° 79	16° 6	1
28	31° 69	26° 4	14	12° 06	12° 7	7	16° 47	53° 7	4	13° 09	16° 4	1
Nov. 7	31° 94	27° 8	16	12° 31	12° 0	9	16° 74	53° 3	5	13° 38	16° 2	1
17	32° 16	29° 4	18	12° 55	11° 1	9	17° 00	52° 8	6	13° 66	16° 0	1
27	32° 35	31° 2	18	12° 76	10° 2	9	17° 23	52° 2	6	13° 91	15° 8	1
Dec. 7	32° 51	33° 0	19	12° 94	9° 3	9	17° 43	51° 6	5	14° 12	15° 7	0
17	32° 63	34° 9	19	13° 08	8° 4	9	17° 59	51° 1	4	14° 30	15° 7	0
27	32° 71	36° 8	17	13° 18	7° 5	8	17° 71	50° 7	4	14° 43	15° 7	1
37	32° 75	38° 5	17	13° 24	6° 7	7	17° 78	50° 3	4	14° 51	15° 8	1

APPARENT PLACES OF STARS, 1889. 329

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	μ Geminorum.		α Argus. (<i>Canopus</i>)		γ Geminorum.		δ Geminorum.	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	^h 6 ^m 16	[°] 22 ['] 34	^h 6 ^m 21	[°] 52 ['] 37	^h 6 ^m 31	[°] 16 ['] 29	^h 6 ^m 39	[°] 13 ['] 0
Jan. 1	15 ^h 07 ^m 6 ^s	6 [°] 6 ['] 1 ["]	31 ^h 03 ^m 4 ^s	72 [°] 9 ['] 33 ["]	18 ^h 25 ^m 7 ^s	31 [°] 4 ['] 3 ["]	3 ^h 95 ^m 8 ^s	47 [°] 7 ['] 6 ["]
11	15 ^h 13 ^m 1 ^s	6 [°] 7 ['] 2 ["]	30 ^h 99 ^m 11 ^s	76 [°] 2 ['] 31 ["]	18 ^h 32 ^m 3 ^s	31 [°] 1 ['] 1 ["]	4 ^h 03 ^m 3 ^s	47 [°] 1 ['] 4 ["]
21	15 ^h 14 ^m 4 ^s	6 [°] 9 ['] 2 ["]	30 ^h 88 ^m 18 ^s	79 [°] 3 ['] 28 ["]	18 ^h 35 ^m 3 ^s	31 [°] 0 ['] 1 ["]	4 ^h 06 ^m 2 ^s	46 [°] 7 ['] 3 ["]
31	15 ^h 10 ^m 8 ^s	7 [°] 1 ['] 3 ["]	30 ^h 70 ^m 23 ^s	82 [°] 1 ['] 23 ["]	18 ^h 32 ^m 7 ^s	30 [°] 9 ['] 0 ["]	4 ^h 04 ^m 7 ^s	46 [°] 4 ['] 1 ["]
Feb. 10	15 ^h 02 ^m 13 ^s	7 [°] 4 ['] 3 ["]	30 ^h 47 ^m 28 ^s	84 [°] 4 ['] 19 ["]	18 ^h 25 ^m 11 ^s	30 [°] 9 ['] 1 ["]	3 ^h 97 ^m 10 ^s	46 [°] 3 ['] 1 ["]
20	14 ^h 89 ^m 16 ^s	7 [°] 7 ['] 2 ["]	30 ^h 19 ^m 32 ^s	86 [°] 3 ['] 13 ["]	18 ^h 14 ^m 15 ^s	31 [°] 0 ['] 1 ["]	3 ^h 87 ^m 14 ^s	46 [°] 2 ['] 0 ["]
Mar. 2	14 ^h 73 ^m 17 ^s	7 [°] 9 ['] 2 ["]	29 ^h 87 ^m 35 ^s	87 [°] 6 ['] 9 ["]	17 ^h 99 ^m 17 ^s	31 [°] 1 ['] 1 ["]	3 ^h 73 ^m 16 ^s	46 [°] 2 ['] 1 ["]
12	14 ^h 56 ^m 19 ^s	8 [°] 1 ['] 2 ["]	29 ^h 52 ^m 36 ^s	88 [°] 5 ['] 4 ["]	17 ^h 82 ^m 18 ^s	31 [°] 2 ['] 2 ["]	3 ^h 57 ^m 18 ^s	46 [°] 3 ['] 1 ["]
22	14 ^h 37 ^m 19 ^s	8 [°] 3 ['] 1 ["]	29 ^h 16 ^m 37 ^s	88 [°] 9 ['] 2 ["]	17 ^h 64 ^m 18 ^s	31 [°] 4 ['] 2 ["]	3 ^h 39 ^m 18 ^s	46 [°] 4 ['] 2 ["]
Apr. 1	14 ^h 18 ^m 18 ^s	8 [°] 4 ['] 0 ["]	28 ^h 79 ^m 35 ^s	88 [°] 7 ['] 7 ["]	17 ^h 46 ^m 17 ^s	31 [°] 6 ['] 1 ["]	3 ^h 21 ^m 17 ^s	46 [°] 6 ['] 2 ["]
11	14 ^h 00 ^m 15 ^s	8 [°] 4 ['] 0 ["]	28 ^h 44 ^m 32 ^s	88 [°] 0 ['] 12 ["]	17 ^h 29 ^m 15 ^s	31 [°] 7 ['] 2 ["]	3 ^h 04 ^m 16 ^s	46 [°] 8 ['] 3 ["]
21	13 ^h 85 ^m 12 ^s	8 [°] 4 ['] 0 ["]	28 ^h 12 ^m 29 ^s	86 [°] 8 ['] 16 ["]	17 ^h 14 ^m 13 ^s	31 [°] 9 ['] 2 ["]	2 ^h 88 ^m 13 ^s	47 [°] 1 ['] 3 ["]
May 1	13 ^h 73 ^m 8 ^s	8 [°] 4 ['] 0 ["]	27 ^h 83 ^m 24 ^s	85 [°] 2 ['] 21 ["]	17 ^h 01 ^m 9 ^s	32 [°] 1 ['] 2 ["]	2 ^h 75 ^m 9 ^s	47 [°] 4 ['] 4 ["]
11	13 ^h 65 ^m 5 ^s	8 [°] 4 ['] 1 ["]	27 ^h 59 ^m 20 ^s	83 [°] 1 ['] 25 ["]	16 ^h 92 ^m 5 ^s	32 [°] 3 ['] 3 ["]	2 ^h 66 ^m 6 ^s	47 [°] 8 ['] 4 ["]
21	13 ^h 60 ^m 0 ^s	8 [°] 3 ['] 0 ["]	27 ^h 39 ^m 14 ^s	80 [°] 6 ['] 28 ["]	16 ^h 87 ^m 2 ^s	32 [°] 6 ['] 3 ["]	2 ^h 60 ^m 2 ^s	48 [°] 2 ['] 4 ["]
31	13 ^h 60 ^m 5 ^s	8 [°] 3 ['] 0 ["]	27 ^h 25 ^m 8 ^s	77 [°] 8 ['] 30 ["]	16 ^h 85 ^m 3 ^s	32 [°] 9 ['] 3 ["]	2 ^h 58 ^m 2 ^s	48 [°] 6 ['] 5 ["]
June 10	13 ^h 65 ^m 9 ^s	8 [°] 3 ['] 1 ["]	27 ^h 17 ^m 2 ^s	74 [°] 8 ['] 32 ["]	16 ^h 88 ^m 7 ^s	33 [°] 2 ['] 4 ["]	2 ^h 60 ^m 6 ^s	49 [°] 1 ['] 6 ["]
20	13 ^h 74 ^m 14 ^s	8 [°] 4 ['] 1 ["]	27 ^h 15 ^m 36 ^s	71 [°] 6 ['] 36 ["]	16 ^h 95 ^m 13 ^s	33 [°] 6 ['] 4 ["]	2 ^h 66 ^m 10 ^s	49 [°] 7 ['] 6 ["]
30	13 ^h 88 ^m 17 ^s	8 [°] 5 ['] 2 ["]	27 ^h 19 ^m 11 ^s	68 [°] 0 ['] 34 ["]	17 ^h 08 ^m 15 ^s	34 [°] 0 ['] 5 ["]	{77} {81}	{77} {81}
July 10	14 ^h 05 ^m 20 ^s	8 [°] 7 ['] 2 ["]	27 ^h 30 ^m 16 ^s	64 [°] 6 ['] 33 ["]	17 ^h 23 ^m 18 ^s	34 [°] 5 ['] 5 ["]	2 ^h 91 ^m 17 ^s	51 [°] 0 ['] 6 ["]
20	14 ^h 25 ^m 23 ^s	8 [°] 9 ['] 2 ["]	27 ^h 46 ^m 22 ^s	61 [°] 3 ['] 31 ["]	17 ^h 41 ^m 21 ^s	35 [°] 0 ['] 4 ["]	3 ^h 08 ^m 20 ^s	51 [°] 6 ['] 6 ["]
30	14 ^h 48 ^m 26 ^s	9 [°] 1 ['] 2 ["]	27 ^h 68 ^m 26 ^s	58 [°] 2 ['] 28 ["]	17 ^h 62 ^m 23 ^s	35 [°] 4 ['] 4 ["]	3 ^h 28 ^m 22 ^s	52 [°] 2 ['] 5 ["]
Aug. 9	14 ^h 74 ^m 28 ^s	9 [°] 3 ['] 2 ["]	27 ^h 94 ^m 31 ^s	55 [°] 4 ['] 24 ["]	17 ^h 85 ^m 26 ^s	35 [°] 8 ['] 3 ["]	3 ^h 50 ^m 25 ^s	52 [°] 7 ['] 4 ["]
19	15 ^h 02 ^m 29 ^s	9 [°] 5 ['] 1 ["]	28 ^h 25 ^m 35 ^s	53 [°] 0 ['] 20 ["]	18 ^h 11 ^m 27 ^s	36 [°] 1 ['] 3 ["]	3 ^h 75 ^m 26 ^s	53 [°] 1 ['] 4 ["]
29	15 ^h 31 ^m 30 ^s	9 [°] 6 ['] 1 ["]	28 ^h 60 ^m 37 ^s	51 [°] 0 ['] 14 ["]	18 ^h 38 ^m 29 ^s	36 [°] 4 ['] 2 ["]	4 ^h 01 ^m 28 ^s	53 [°] 5 ['] 2 ["]
Sept. 8	15 ^h 61 ^m 32 ^s	9 [°] 7 ['] 0 ["]	28 ^h 97 ^m 39 ^s	49 [°] 6 ['] 8 ["]	18 ^h 67 ^m 29 ^s	36 [°] 6 ['] 0 ["]	4 ^h 29 ^m 29 ^s	53 [°] 7 ['] 0 ["]
18	15 ^h 93 ^m 32 ^s	9 [°] 7 ['] 0 ["]	29 ^h 36 ^m 41 ^s	48 [°] 8 ['] 2 ["]	18 ^h 96 ^m 31 ^s	36 [°] 6 ['] 1 ["]	4 ^h 58 ^m 30 ^s	53 [°] 7 ['] 1 ["]
28	16 ^h 25 ^m 32 ^s	9 [°] 7 ['] 1 ["]	29 ^h 77 ^m 41 ^s	48 [°] 6 ['] 4 ["]	19 ^h 27 ^m 31 ^s	36 [°] 5 ['] 3 ["]	4 ^h 88 ^m 30 ^s	53 [°] 6 ['] 3 ["]
Oct. 8	16 ^h 57 ^m 31 ^s	9 [°] 6 ['] 2 ["]	30 ^h 18 ^m 40 ^s	49 [°] 0 ['] 11 ["]	19 ^h 58 ^m 31 ^s	36 [°] 2 ['] 4 ["]	5 ^h 18 ^m 30 ^s	53 [°] 3 ['] 5 ["]
18	16 ^h 88 ^m 31 ^s	9 [°] 4 ['] 2 ["]	30 ^h 58 ^m 38 ^s	50 [°] 1 ['] 16 ["]	19 ^h 89 ^m 30 ^s	35 [°] 8 ['] 5 ["]	5 ^h 48 ^m 30 ^s	52 [°] 8 ['] 6 ["]
28	17 ^h 19 ^m 28 ^s	9 [°] 2 ['] 3 ["]	30 ^h 96 ^m 35 ^s	51 [°] 7 ['] 22 ["]	20 ^h 19 ^m 28 ^s	35 [°] 3 ['] 5 ["]	5 ^h 78 ^m 30 ^s	52 [°] 2 ['] 8 ["]
Nov. 7	17 ^h 49 ^m 28 ^s	8 [°] 9 ['] 3 ["]	31 ^h 31 ^m 31 ^s	53 [°] 9 ['] 27 ["]	20 ^h 48 ^m 28 ^s	34 [°] 8 ['] 6 ["]	6 ^h 08 ^m 28 ^s	51 [°] 4 ['] 8 ["]
17	17 ^h 77 ^m 26 ^s	8 [°] 6 ['] 2 ["]	31 ^h 62 ^m 26 ^s	56 [°] 6 ['] 31 ["]	20 ^h 76 ^m 26 ^s	34 [°] 2 ['] 6 ["]	6 ^h 36 ^m 25 ^s	50 [°] 6 ['] 8 ["]
27	18 ^h 03 ^m 22 ^s	8 [°] 4 ['] 2 ["]	31 ^h 88 ^m 21 ^s	59 [°] 7 ['] 33 ["]	21 ^h 02 ^m 23 ^s	33 [°] 6 ['] 6 ["]	6 ^h 61 ^m 23 ^s	49 [°] 8 ['] 8 ["]
Dec. 7	18 ^h 25 ^m 19 ^s	8 [°] 2 ['] 1 ["]	32 ^h 09 ^m 14 ^s	63 [°] 0 ['] 34 ["]	21 ^h 25 ^m 15 ^s	33 [°] 0 ['] 4 ["]	6 ^h 84 ^m 15 ^s	49 [°] 0 ['] 7 ["]
17	18 ^h 44 ^m 14 ^s	8 [°] 1 ['] 0 ["]	32 ^h 23 ^m 7 ^s	66 [°] 4 ['] 35 ["]	21 ^h 44 ^m 15 ^s	32 [°] 4 ['] 4 ["]	7 ^h 04 ^m 15 ^s	48 [°] 2 ['] 7 ["]
27	18 ^h 58 ^m 9 ^s	8 [°] 1 ['] 1 ["]	32 ^h 30 ^m 0 ^s	69 [°] 9 ['] 34 ["]	21 ^h 59 ^m 10 ^s	32 [°] 0 ['] 4 ["]	7 ^h 19 ^m 11 ^s	47 [°] 5 ['] 6 ["]
37	18 ^h 67 ^m 9 ^s	8 [°] 2 ['] 1 ["]	32 ^h 30 ^m 0 ^s	73 [°] 3 ['] 34 ["]	21 ^h 69 ^m 10 ^s	31 [°] 6 ['] 4 ["]	7 ^h 30 ^m 11 ^s	46 [°] 9 ['] 6 ["]

330 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Canis Majoris. (Sirius)			θ Canis Majoris.			ι Canis Majoris.			γ Canis Majoris.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.	
	^h ^m ^s ['] 6 40 16 33			^h ^m ^s ['] 6 49 11 53			^h ^m ^s ['] 6 54 28 49			^h ^m ^s ['] 6 58 15 28		
Jan. 1	15° 91' 6" 58° 0' 22"			2° 49' 65° 1' 20"			16° 66' 21° 0' 28"			44° 85' 15° 7' 23"		
11	15° 97' 0" 60° 2' 21"			2° 56' 67° 1' 18"			16° 71' 23° 8' 26"			44° 92' 18° 0' 20"		
21	15° 97' 0" 62° 3' 18"			2° 58' 68° 9' 16"			16° 71' 26° 4' 23"			44° 95' 20° 0' 18"		
31	15° 93' 4" 64° 1' 15"			2° 55' 70° 5' 14"			16° 66' 28° 7' 21"			44° 93' 21° 8' 15"		
Feb. 10	15° 84' 9" 65° 6' 13"			2° 47' 71° 9' 11"			16° 56' 30° 8' 17"			44° 86' 23° 3' 23"		
20	15° 71' 13" 66° 9' 9"			2° 36' 73° 0' 8"			16° 42' 32° 5' 13"			44° 75' 24° 6' 10"		
Mar. 2	15° 55' 16" 67° 8' 6"			2° 21' 73° 8' 5"			16° 25' 33° 8' 10"			44° 60' 25° 6' 6"		
12	15° 37' 19" 68° 4' 3"			2° 04' 74° 3' 2"			16° 05' 34° 8' 5"			44° 43' 26° 2' 4"		
22	15° 18' 20" 68° 7' 0"			1° 86' 74° 5' 1"			15° 83' 35° 3' 1"			44° 24' 26° 6' 0"		
Apr. 1	14° 98' 19" 68° 7' 4"			1° 67' 74° 4' 3"			15° 61' 35° 4' 3"			44° 05' 26° 6' 3"		
11	14° 79' 17" 68° 3' 7"			1° 49' 74° 1' 6"			15° 39' 35° 1' 7"			43° 86' 26° 3' 6"		
21	14° 62' 15" 67° 6' 10"			1° 32' 73° 5' 9"			15° 18' 34° 4' 11"			43° 69' 25° 7' 9"		
May 1	14° 47' 12" 66° 6' 12"			1° 18' 72° 6' 11"			15° 00' 33° 3' 15"			43° 54' 24° 8' 11"		
11	14° 35' 8" 65° 4' 15"			1° 06' 71° 5' 13"			14° 85' 31° 8' 17"			43° 41' 23° 7' 14"		
21	14° 27' 4" 63° 9' 17"			0° 98' 70° 2' 16"			14° 73' 30° 1' 21"			43° 32' 22° 3' 16"		
31	14° 23' 1" 62° 2' 19"			0° 94' 68° 6' 17"			14° 65' 28° 0' 23"			43° 26' 20° 7' 18"		
June 10	14° 22' 3" 60° 3' 20"			0° 93' 66° 9' 18"			14° 62' 25° 7' 25"			43° 24' 18° 9' 20"		
20	14° 25' 7" 58° 3' 22"			0° 96' 65° 1' 19"			14° 62' 23° 2' 26"			43° 26' 16° 9' 20"		
30	14° 22' 11" 57° 1' 21"			1° 03' 63° 2' 21"			14° 66' 20° 6' 29"			43° 32' 14° 9' 23"		
July 10	14° 44' 15" 53° 8' 21"			1° 15' 61° 1' 19"			14° 76' 17° 7' 26"			43° 42' 12° 6' 21"		
20	14° 59' 18" 51° 7' 20"			1° 29' 59° 2' 19"			14° 89' 15° 1' 25"			43° 55' 10° 5' 20"		
30	14° 77' 20" 49° 7' 19"			1° 46' 57° 3' 17"			15° 05' 12° 6' 24"			43° 71' 8° 5' 18"		
Aug. 9	14° 97' 23" 47° 8' 16"			1° 66' 55° 6' 14"			15° 24' 10° 2' 22"			43° 90' 6° 7' 16"		
19	15° 20' 25" 46° 2' 13"			1° 88' 54° 2' 12"			15° 46' 8° 2' 25"			44° 12' 5° 1' 23"		
29	15° 45' 26" 44° 9' 9"			2° 12' 53° 0' 9"			15° 71' 6° 5' 13"			44° 36' 3° 8' 10"		
Sept. 8	15° 71' 28" 44° 0' 5"			2° 38' 52° 1' 5"			15° 98' 5° 2' 9"			44° 61' 2° 8' 5"		
18	15° 99' 29" 43° 5' 1"			2° 65' 51° 6' 0"			16° 27' 4° 3' 3"			44° 88' 2° 3' 2"		
28	16° 28' 29" 43° 4' 3"			2° 94' 51° 6' 3"			16° 57' 4° 0' 2"			45° 17' 2° 1' 3"		
Oct. 8	16° 57' 29" 43° 7' 8"			3° 23' 51° 9' 7"			16° 88' 4° 2' 8"			45° 46' 2° 4' 7"		
18	16° 86' 29" 44° 5' 12"			3° 52' 52° 6' 11"			17° 20' 5° 0' 13"			45° 76' 3° 1' 11"		
28	17° 15' 28" 45° 7' 16"			3° 81' 53° 7' 14"			17° 51' 6° 3' 17"			46° 05' 4° 2' 15"		
Nov. 7	17° 43' 26" 47° 3' 19"			4° 09' 55° 1' 17"			17° 81' 8° 0' 22"			46° 34' 5° 7' 18"		
17	17° 69' 24" 49° 2' 23"			4° 36' 56° 8' 20"			18° 09' 10° 2' 25"			46° 62' 7° 5' 21"		
27	17° 93' 21" 51° 4' 23"			4° 61' 58° 8' 21"			18° 34' 12° 7' 27"			46° 87' 9° 6' 23"		
Dec. 7	18° 14' 17" 53° 7' 23"			4° 83' 60° 9' 21"			18° 57' 15° 4' 28"			47° 10' 11° 9' 23"		
17	18° 31' 13" 56° 0' 24"			5° 01' 63° 0' 22"			18° 75' 18° 2' 29"			47° 29' 14° 2' 23"		
27	18° 44' 9" 58° 4' 23"			5° 15' 65° 2' 20"			18° 88' 21° 1' 29"			47° 43' 16° 5' 23"		
37	18° 53' 9" 60° 7' 23"			5° 25' 67° 2' 20"			18° 97' 24° 0' 29"			47° 54' 18° 8' 23"		

APPARENT PLACES OF STARS, 1889. 331

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	δ Geminorum.			β Canis Minoris.			α^* Geminorum. (Castor)			α Canis Minoris. (Procyon)		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 7	^m 13	^s 22	^h 7	^m 21	^s 30	^h 7	^m 27	^s 32	^h 7	^m 33	^s 5
Jan. 1	29 ⁹⁷	5 ⁰	8 ²¹	40 ⁷	31 ³⁸	47 ⁶	29 ⁷⁵	27 ⁷				
11	30 ⁰⁹	4 ⁹	8 ³²	39 ⁸	31 ⁵³	48 ¹	29 ⁸⁸	26 ⁵				
21	30 ¹⁶	5 ⁰	8 ³⁹	39 ⁰	31 ⁶²	48 ⁸	29 ⁹⁶	25 ⁵				
31	30 ¹⁷	5 ²	8 ⁴¹	38 ³	31 ⁶⁵	49 ⁶	29 ⁹⁸	24 ⁷				
Feb. 10	30 ¹³	5 ⁶	8 ³⁸	37 ⁸	31 ⁶²	50 ⁵	29 ⁰⁶	24 ¹				
20	30 ⁰⁵	6 ⁰	8 ³¹	37 ⁶	31 ⁵⁴	51 ⁴	29 ⁸⁹	23 ⁶				
Mar. 2	29 ⁹³	6 ⁴	8 ¹⁹	37 ⁵	31 ⁴²	52 ³	29 ⁷⁸	23 ³				
12	29 ⁷⁸	6 ⁸	8 ⁰⁴	37 ⁵	31 ²⁶	53 ⁰	29 ⁶⁴	23 ²				
22	29 ⁶⁰	7 ²	7 ⁸⁸	37 ⁶	31 ⁰⁷	53 ⁷	29 ⁴⁹	23 ²				
Apr. 1	29 ⁴²	7 ⁵	7 ⁷¹	37 ⁸	30 ⁸⁸	54 ²	29 ³²	23 ³				
11	29 ²⁴	7 ⁸	7 ⁵⁴	38 ¹	30 ⁶⁸	54 ⁶	29 ¹⁵	23 ⁶				
21	29 ⁰⁷	8 ⁰	7 ³⁸	38 ⁵	30 ⁴⁹	54 ⁸	28 ⁹⁹	23 ⁹				
May 1	28 ⁹³	8 ²	7 ²⁴	38 ⁹	30 ³²	54 ⁸	28 ⁸⁴	24 ⁴				
11	28 ⁸¹	8 ³	7 ¹³	39 ⁴	30 ¹⁸	54 ⁷	28 ⁷²	24 ⁹				
21	28 ⁷²	8 ⁴	7 ⁰⁴	40 ⁰	30 ⁰⁸	54 ⁵	28 ⁶²	25 ⁵				
31	28 ⁶⁸	8 ⁴	6 ⁹⁹	40 ⁶	30 ⁰²	54 ¹	28 ⁵⁶	26 ²				
June 10	28 ⁶⁷	8 ⁴	6 ⁹⁷	41 ³	30 ⁰⁰	53 ⁷	28 ⁵⁴	27 ⁰				
20	28 ⁷¹	8 ⁴	6 ⁹⁹	42 ⁰	30 ⁰²	53 ¹	28 ⁵⁵	27 ⁸				
30	28 ⁷⁸	8 ⁴	7 ⁰⁵	42 ⁷	30 ⁰⁹	52 ⁵	28 ⁵⁹	28 ⁶				
July 10	28 ⁹⁰	8 ⁴	7 ¹⁴	43 ¹	30 ¹⁹	51 ⁹	28 ⁶⁷	29 ⁵				
20	29 ⁰⁵	8 ⁴	7 ²⁸	44 ³	30 ³⁴	51 ¹	28 ⁷⁹	30 ⁴				
30	29 ²³	8 ³	7 ⁴⁴	45 ⁰	30 ⁵²	50 ⁴	28 ⁹³	31 ²				
Aug. 9	29 ⁴⁴	8 ²	7 ⁶²	45 ⁶	30 ⁷⁴	49 ⁷	29 ¹⁰	31 ⁹				
19	29 ⁶⁷	8 ⁰	7 ⁸³	46 ¹	30 ⁹⁸	49 ⁰	29 ³⁰	32 ⁵				
29	29 ⁹³	7 ⁸	8 ⁰⁶	46 ⁴	31 ²⁵	48 ³	29 ⁵²	32 ⁹				
Sept. 8	30 ²¹	7 ⁵	8 ³¹	46 ⁶	31 ⁵⁴	47 ⁵	29 ⁷⁵	33 ¹				
18	30 ⁵⁰	7 ²	8 ⁵⁸	46 ⁵	31 ⁸⁵	46 ⁸	30 ⁰¹	33 ¹				
28	30 ⁸⁰	6 ⁷	8 ⁸⁶	46 ²	32 ¹⁸	46 ⁰	30 ²⁸	32 ⁸				
Oct. 8	31 ¹²	6 ²	9 ¹⁶	45 ⁸	32 ⁵²	45 ³	30 ⁵⁷	32 ³				
18	31 ⁴⁵	5 ⁶	9 ⁴⁶	45 ¹	32 ⁸⁸	44 ⁶	30 ⁸⁷	31 ⁵				
28	31 ⁷⁸	4 ⁹	9 ⁷⁷	44 ²	33 ²³	44 ⁰	31 ¹⁷	30 ⁵				
Nov. 7	32 ¹⁰	4 ²	10 ⁰⁷	43 ²	33 ⁵⁹	43 ⁴	31 ⁴⁸	29 ⁴				
17	32 ⁴¹	3 ⁶	10 ³⁶	42 ⁰	33 ⁹⁴	43 ⁰	31 ⁷⁸	28 ¹				
27	32 ⁷¹	3 ⁰	10 ⁶⁴	40 ⁸	34 ²⁷	42 ⁷	32 ⁰⁶	26 ⁷				
Dec. 7	32 ⁹⁸	2 ⁵	10 ⁹⁰	39 ⁶	34 ⁵⁸	42 ⁶	32 ³²	25 ²				
17	33 ²²	2 ¹	11 ¹³	38 ⁴	34 ⁸⁵	42 ⁶	32 ⁵⁵	23 ⁸				
27	33 ⁴²	1 ⁸	11 ³²	37 ²	35 ⁰⁸	42 ⁹	32 ⁷⁵	22 ⁴				
37	33 ⁵⁷	1 ⁷	11 ⁴⁶	36 ²	35 ²⁶	43 ³	32 ⁹⁰	21 ¹				

332 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Geminorum. (Pollux)		ξ Argus.		6 Cancri.		γ Argus.	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	^h ₇ ^m ₃₈ ^s ₂₈ [°] ₁₇		^h ₇ ^m ₄₄ ^s ₂₄ [°] ₃₄		^h ₇ ^m ₅₆ ^s ₂₈ [°] ₆		^h ₈ ^m ₂ ^s ₂₃ [°] ₅₈	
Jan. 1	31 ^s .66	31 ^s .8	38 ^s .29	50 ^s .8	42 ^s .24	12 ^s .3	49 ^s .66	63 ^s .6
11	31 ^s .81	32 ^s .1	38 ^s .42	53 ^s .6	42 ^s .41	12 ^s .5	49 ^s .80	66 ^s .3
21	31 ^s .91	32 ^s .5	38 ^s .48	56 ^s .2	42 ^s .53	12 ^s .8	49 ^s .88	69 ^s .0
31	31 ^s .95	33 ^s .1	38 ^s .49	58 ^s .6	42 ^s .59	13 ^s .3	49 ^s .91	71 ^s .5
Feb. 10	31 ^s .94	33 ^s .8	38 ^s .44	60 ^s .8	42 ^s .60	14 ^s .0	49 ^s .89	73 ^s .7
20	31 ^s .87	34 ^s .5	38 ^s .35	62 ^s .7	42 ^s .55	14 ^s .8	49 ^s .82	75 ^s .6
Mar. 2	31 ^s .76	35 ^s .2	38 ^s .23	64 ^s .3	42 ^s .46	15 ^s .6	49 ^s .71	77 ^s .3
12	31 ^s .61	35 ^s .9	38 ^s .07	65 ^s .4	42 ^s .33	16 ^s .3	49 ^s .56	78 ^s .6
22	31 ^s .44	36 ^s .6	37 ^s .89	66 ^s .2	42 ^s .17	17 ^s .0	49 ^s .39	79 ^s .5
Apr. 1	31 ^s .26	37 ^s .1	37 ^s .69	66 ^s .7	41 ^s .99	17 ^s .7	49 ^s .20	80 ^s .1
11	31 ^s .07	37 ^s .5	37 ^s .49	66 ^s .8	41 ^s .81	18 ^s .2	49 ^s .00	80 ^s .3
21	30 ^s .89	37 ^s .8	37 ^s .29	66 ^s .5	41 ^s .63	18 ^s .6	48 ^s .81	80 ^s .1
May 1	30 ^s .73	38 ^s .0	37 ^s .11	65 ^s .8	41 ^s .46	18 ^s .9	48 ^s .63	79 ^s .6
11	30 ^s .59	38 ^s .0	36 ^s .95	64 ^s .8	41 ^s .32	19 ^s .0	48 ^s .47	78 ^s .8
21	30 ^s .48	38 ^s .0	36 ^s .81	63 ^s .5	41 ^s .21	19 ^s .0	48 ^s .33	77 ^s .6
31	30 ^s .41	37 ^s .8	36 ^s .70	61 ^s .9	41 ^s .13	18 ^s .9	48 ^s .22	76 ^s .1
June 10	30 ^s .38	37 ^s .5	36 ^s .64	60 ^s .1	41 ^s .08	18 ^s .7	48 ^s .14	74 ^s .4
20	30 ^s .39	37 ^s .2	36 ^s .61	58 ^s .0	41 ^s .08	18 ^s .3	48 ^s .09	72 ^s .5
30	30 ^s .44	36 ^s .8	36 ^s .61	55 ^s .8	41 ^s .11	17 ^s .9	48 ^s .08	70 ^s .4
July 10	30 ^s .53	36 ^s .3	36 ^s .65	53 ^s .5	41 ^s .18	17 ^s .5	48 ^s .10	68 ^s .2
20	30 ^s .67	35 ^s .8	36 ^s .74	50 ^s .9	41 ^s .30	16 ^s .9	48 ^s .15	66 ^s .1
30	30 ^s .83	35 ^s .3	36 ^s .85	48 ^s .6	41 ^s .44	16 ^s .3	48 ^s .26	63 ^s .4
Aug. 9	31 ^s .02	34 ^s .7	36 ^s .99	46 ^s .4	41 ^s .62	15 ^s .7	48 ^s .39	61 ^s .3
19	31 ^s .24	34 ^s .1	37 ^s .17	44 ^s .5	41 ^s .82	15 ^s .0	48 ^s .54	59 ^s .4
29	31 ^s .49	33 ^s .4	37 ^s .37	42 ^s .8	42 ^s .06	14 ^s .2	48 ^s .73	57 ^s .7
Sept. 8	31 ^s .76	32 ^s .8	37 ^s .60	41 ^s .4	42 ^s .32	13 ^s .4	48 ^s .95	56 ^s .3
18	32 ^s .05	32 ^s .1	37 ^s .86	40 ^s .5	42 ^s .60	12 ^s .6	49 ^s .19	55 ^s .3
28	32 ^s .36	31 ^s .3	38 ^s .14	40 ^s .0	42 ^s .90	11 ^s .7	49 ^s .46	54 ^s .8
Oct. 8	32 ^s .69	30 ^s .5	38 ^s .44	40 ^s .0	43 ^s .22	10 ^s .7	49 ^s .75	54 ^s .7
18	33 ^s .03	29 ^s .7	38 ^s .75	40 ^s .5	43 ^s .56	9 ^s .8	50 ^s .06	55 ^s .1
28	33 ^s .38	28 ^s .9	39 ^s .06	41 ^s .5	43 ^s .90	8 ^s .8	50 ^s .37	56 ^s .1
Nov. 7	33 ^s .72	28 ^s .2	39 ^s .37	43 ^s .0	44 ^s .25	7 ^s .9	50 ^s .68	57 ^s .5
17	34 ^s .06	27 ^s .5	39 ^s .67	44 ^s .9	44 ^s .60	7 ^s .1	50 ^s .99	59 ^s .3
27	34 ^s .39	27 ^s .0	39 ^s .96	47 ^s .2	44 ^s .94	6 ^s .4	51 ^s .29	61 ^s .5
Dec. 7	34 ^s .70	26 ^s .6	40 ^s .23	49 ^s .7	45 ^s .25	5 ^s .9	51 ^s .57	63 ^s .9
17	34 ^s .97	26 ^s .4	40 ^s .46	52 ^s .4	45 ^s .54	5 ^s .5	51 ^s .81	66 ^s .6
27	35 ^s .20	26 ^s .4	40 ^s .65	55 ^s .2	45 ^s .79	5 ^s .3	52 ^s .02	69 ^s .4
37	35 ^s .38	26 ^s .5	40 ^s .79	58 ^s .0	46 ^s .00	5 ^s .4	52 ^s .19	72 ^s .2

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Cancri.			γ Cancri.			γ Cancri.			δ Hydræ.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s [°] ['] 8 10 9 31			^h ^m ^s [°] ['] 8 26 20 48			^h ^m ^s [°] ['] 8 36 21 51			^h ^m ^s [°] ['] 8 40 6 49		
Jan. 1	29° 98' 16" 34° 0' 10"			17° 53' 20" 59° 2' 4"			51° 84' 20" 57° 8' 4"			54° 04' 19" 30° 3' 13"		
11	30° 14' 12" 33° 0' 9"			17° 73' 14" 58° 8' 2"			52° 04' 15" 57° 4' 2"			54° 23' 14" 29° 0' 11"		
21	30° 26' 6" 32° 1' 6"			17° 87' 9" 58° 6' 1"			52° 19' 10" 57° 2' 1"			54° 37' 10" 27° 9' 9"		
31	30° 32' 2" 31° 5' 5"			17° 96' 3" 58° 7' 2"			52° 29' 5" 57° 3' 3"			54° 47' 4" 27° 0' 7"		
Feb. 10	30° 34' 3" 31° 0' 2"			17° 99' 1" 58° 9' 3"			52° 34' 1" 57° 6' 4"			54° 51' 1" 26° 3' 4"		
20	30° 31' 8" 30° 8' 1"			17° 98' 7" 59° 2' 5"			52° 33' 5" 58° 0' 6"			54° 50' 5" 25° 9' 3"		
Mar. 2	30° 23' 11" 30° 7' 0"			17° 91' 10" 59° 7' 6"			52° 28' 9" 58° 6' 6"			54° 45' 9" 25° 6' 1"		
12	30° 12' 14" 30° 7' 2"			17° 81' 13" 60° 3' 6"			52° 19' 13" 59° 2' 6"			54° 36' 11" 25° 5' 1"		
22	29° 98' 15" 30° 9' 2"			17° 68' 15" 60° 9' 6"			52° 06' 15" 59° 8' 7"			54° 25' 14" 25° 6' 2"		
Apr. 1	29° 83' 16" 31° 1' 4"			17° 53' 16" 61° 5' 5"			51° 91' 16" 60° 5' 6"			54° 11' 15" 25° 8' 3"		
11	29° 67' 16" 31° 5' 4"			17° 37' 17" 62° 0' 5"			51° 75' 17" 61° 1' 6"			53° 96' 16" 26° 1' 4"		
21	29° 51' 15" 31° 9' 4"			17° 20' 16" 62° 5' 5"			51° 58' 16" 61° 7' 5"			53° 80' 15" 26° 5' 5"		
May 1	29° 36' 13" 32° 3' 5"			17° 04' 14" 63° 0' 4"			51° 42' 14" 62° 2' 4"			53° 65' 13" 27° 0' 5"		
11	29° 23' 11" 32° 8' 6"			16° 90' 12" 63° 4' 3"			51° 28' 12" 62° 6' 3"			53° 52' 12" 27° 5' 6"		
21	29° 12' 8" 33° 4' 5"			16° 78' 9" 63° 7' 2"			51° 16' 10" 62° 9' 2"			53° 40' 9" 28° 1' 6"		
31	29° 04' 5" 33° 9' 6"			16° 69' 6" 63° 9' 1"			51° 06' 6" 63° 1' 1"			53° 31' 7" 28° 7' 6"		
June 10	28° 99' 2" 34° 5' 6"			16° 63' 3" 64° 0' 1"			51° 00' 4" 63° 2' 0"			53° 24' 4" 29° 3' 7"		
20	28° 97' 2" 35° 1' 5"			16° 60' 0" 64° 1' 1"			50° 96' 1" 63° 2' 1"			53° 20' 1" 30° 0' 7"		
30	28° 99' 5" 35° 6' 6"			16° 60' 4" 64° 0' 1"			50° 95' 3" 63° 1' 1"			53° 19' 2" 30° 7' 6"		
July 10	29° 04' 8" 36° 2' 5"			16° 64' 7" 63° 9' 1"			50° 98' 7" 63° 0' 2"			53° 21' 5" 31° 3' 6"		
20	29° 12' 12" 36° 7' 5"			16° 71' 12" 63° 8' 3"			51° 05' 10" 62° 8' 4"			53° 26' 8" 31° 9' 6"		
30	29° 24' 14" 37° 2' 4"			16° 83' 14" 63° 5' 3"			51° 15' 13" 62° 4' 4"			53° 11' 11" 31° 3' 5"		
Aug. 9	29° 38' 17" 37° 6' 3"			16° 97' 16" 63° 2' 4"			51° 28' 15" 62° 0' 5"			53° 46' 14" 33° 0' 3"		
19	29° 55' 19" 37° 9' 1"			17° 13' 20" 62° 8' 6"			51° 43' 19" 61° 5' 7"			53° 60' 16" 33° 3' 1"		
29	29° 74' 22" 38° 0' 1"			17° 33' 22" 62° 2' 6"			51° 62' 21" 60° 8' 7"			53° 76' 19" 33° 4' 0"		
Sept. 8	29° 96' 24" 37° 9' 2"			17° 55' 24" 61° 6' 8"			51° 83' 24" 60° 1' 9"			53° 95' 22" 33° 4' 2"		
18	30° 20' 26" 37° 7' 5"			17° 79' 27" 60° 8' 9"			52° 07' 26" 59° 2' 10"			54° 17' 24" 33° 2' 5"		
28	30° 46' 28" 37° 2' 7"			18° 06' 29" 59° 9' 10"			52° 33' 29" 58° 2' 11"			54° 41' 27" 32° 7' 7"		
Oct. 8	30° 74' 30" 36° 5' 9"			18° 35' 31" 58° 9' 11"			52° 62' 30" 57° 1' 12"			54° 68' 28" 32° 0' 10"		
18	31° 04' 31" 35° 6' 11"			18° 66' 32" 57° 8' 12"			52° 92' 32" 55° 9' 13"			54° 96' 30" 31° 0' 12"		
28	31° 35' 32" 34° 5' 12"			18° 98' 33" 56° 6' 13"			53° 24' 34" 54° 6' 13"			55° 26' 31" 29° 8' 13"		
Nov. 7	31° 67' 31" 33° 3' 13"			19° 31' 34" 55° 3' 12"			53° 58' 34" 53° 3' 12"			55° 57' 32" 28° 5' 15"		
17	31° 98' 30" 32° 0' 14"			19° 65' 33" 54° 1' 11"			53° 92' 34" 52° 1' 12"			55° 89' 32" 27° 0' 16"		
27	32° 28' 29" 30° 6' 14"			19° 98' 32" 53° 0' 11"			54° 26' 33" 50° 9' 11"			56° 21' 30" 25° 4' 16"		
Dec. 7	32° 57' 27" 29° 2' 13"			20° 30' 30" 51° 9' 9"			54° 59' 30" 49° 8' 9"			56° 51' 28" 23° 8' 16"		
17	32° 84' 24" 27° 9' 13"			20° 60' 26" 51° 0' 7"			54° 89' 27" 48° 9' 8"			56° 79' 25" 22° 2' 15"		
27	33° 08' 19" 26° 6' 11"			20° 86' 22" 50° 3' 5"			55° 16' 23" 48° 1' 5"			57° 04' 22" 20° 7' 14"		
37	33° 27' 25° 5' 11"			21° 08' 49° 8' 5"			55° 39' 47° 6' 5"			57° 26' 22" 19° 3' 14"		

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♋ Ursæ Majoris.			♌ Cancrī.			♍ Cancrī.			♎ Cancrī.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 8	^m 51	[°] 48	^h 8	^m 52	[°] 12	^h 9	^m 11	[°] 6	^h 9	^m 12	[°] 18
Jan. 1	36 ⁵²	28 ⁶		25 ⁰⁶	70 ¹		44 ²⁰	49 ⁸		47 ¹³	27 ⁶	
11	36 ⁸⁰	29 ⁶		25 ²⁷	69 ⁰		44 ⁴¹	48 ⁷		47 ³⁶	26 ⁸	
21	37 ⁰²	31 ⁰		25 ⁴³	68 ²		44 ⁵⁸	47 ⁸		47 ⁵⁵	26 ³	
31	37 ¹⁷	32 ⁶		25 ⁵⁴	67 ⁶		44 ⁶⁹	47 ¹		47 ⁶⁸	26 ⁰	
Feb. 10	37 ²⁵	34 ⁴		25 ⁵⁹	67 ²		44 ⁷⁶	46 ⁶		47 ⁷⁶	25 ⁹	
20	37 ²⁶	36 ²		25 ⁶⁰	67 ¹		44 ⁷⁸	46 ⁴		47 ⁷⁹	26 ¹	
Mar. 2	37 ¹⁹	38 ¹		25 ⁵⁶	67 ¹		44 ⁷⁵	46 ⁴		47 ⁷⁸	26 ⁴	
12	37 ⁰⁶	39 ⁹		25 ⁴⁹	67 ³		44 ⁶⁸	46 ⁵		47 ⁷²	26 ⁹	
Apr. 22	36 ⁸⁹	41 ⁶		25 ³⁸	67 ⁶		44 ⁵⁸	46 ⁸		47 ⁶²	27 ⁵	
1	36 ⁶⁸	43 ⁰		25 ²⁴	68 ⁰		44 ⁴⁵	47 ²		47 ⁴⁹	28 ²	
11	36 ⁴⁵	44 ²		25 ⁰⁹	68 ⁵		44 ³¹	47 ⁶		47 ³⁵	28 ⁸	
21	36 ²¹	45 ⁰		24 ⁹⁴	69 ⁰		44 ¹⁶	48 ¹		47 ²⁰	29 ⁵	
May 1	35 ⁹⁷	45 ⁵		24 ⁸⁰	69 ⁵		44 ⁰¹	48 ⁶		47 ⁰⁵	30 ¹	
11	35 ⁷⁴	45 ⁷		24 ⁶⁶	70 ⁰		43 ⁸⁷	49 ¹		46 ⁹¹	30 ⁶	
21	35 ⁵⁴	45 ⁵		24 ⁵⁴	70 ⁵		43 ⁷⁵	49 ⁶		46 ⁷⁸	31 ¹	
31	35 ³⁷	45 ⁰		24 ⁴⁴	71 ⁰		43 ⁶⁵	50 ²		46 ⁶⁷	31 ⁵	
June 10	35 ²⁴	44 ²		24 ³⁷	71 ⁵		43 ⁵⁷	50 ⁷		46 ⁵⁹	31 ⁸	
20	35 ¹⁵	43 ¹		24 ³²	71 ⁹		43 ⁵²	51 ²		46 ⁵³	32 ⁰	
30	35 ¹¹	41 ⁷		24 ³¹	72 ³		43 ⁵⁰	51 ⁶		46 ⁵⁰	32 ¹	
July 10	35 ¹¹	40 ²		24 ³²	72 ⁶		43 ⁵¹	52 ⁰		46 ⁵⁰	32 ¹	
20	35 ¹⁶	38 ⁵		24 ³⁶	72 ⁹		43 ⁵⁴	52 ³		46 ⁵³	32 ¹	
30	35 ²⁶	36 ⁶		24 ⁴³	73 ¹		43 ⁶¹	52 ⁶		46 ⁵⁸	31 ⁹	
Aug. 9	35 ⁴¹	34 ⁴		24 ⁵⁴	73 ²		43 ⁷⁰	52 ⁷		46 ⁶⁷	31 ⁵	
19	35 ⁶⁰	32 ⁴		24 ⁶⁸	73 ²		43 ⁸²	52 ⁷		46 ⁷⁹	31 ¹	
Sept. 29	35 ⁸³	30 ³		24 ⁸⁴	73 ⁰		43 ⁹⁷	52 ⁶		46 ⁹³	30 ⁵	
8	36 ¹⁰	28 ³		25 ⁰³	72 ⁷		44 ¹⁵	52 ³		47 ¹¹	29 ⁸	
18	36 ⁴⁰	26 ³		25 ²⁴	72 ²		44 ³⁶	51 ⁸		47 ³¹	28 ⁹	
28	36 ⁷⁴	24 ³		25 ⁴⁷	71 ⁴		44 ⁵⁹	51 ⁰		47 ⁵⁴	27 ⁸	
Oct. 8	37 ¹²	22 ⁵		25 ⁷³	70 ⁵		44 ⁸⁴	50 ¹		47 ⁸⁰	26 ⁶	
18	37 ⁵³	20 ⁸		26 ⁰²	69 ⁴		45 ¹²	49 ⁰		48 ⁰⁸	25 ³	
28	37 ⁹⁶	19 ³		26 ³³	68 ¹		45 ⁴²	47 ⁷		48 ³⁹	23 ⁸	
Nov. 7	38 ⁴⁰	18 ¹		26 ⁶⁵	66 ⁷		45 ⁷⁴	46 ³		48 ⁷¹	22 ³	
17	38 ⁸⁶	17 ¹		26 ⁹⁷	65 ²		46 ⁰⁶	44 ⁸		49 ⁰⁴	20 ⁷	
27	39 ³¹	16 ⁵		27 ²⁹	63 ⁷		46 ³⁹	43 ²		49 ³⁸	19 ²	
Dec. 7	39 ⁷⁵	16 ²		27 ⁶¹	62 ²		46 ⁷¹	41 ⁶		49 ⁷¹	17 ⁸	
17	40 ¹⁶	16 ³		27 ⁹¹	60 ⁸		47 ⁰¹	40 ¹		50 ⁰³	16 ⁵	
27	40 ⁵⁴	16 ⁸		28 ¹⁸	59 ⁵		47 ²⁸	38 ⁷		50 ³²	15 ³	
37	40 ⁸⁶	17 ⁷		28 ⁴¹	58 ⁴		47 ⁵²	37 ⁵		50 ⁵⁸	14 ⁴	

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	γ Argus.			α Hydræ.			θ Ursæ Majoris.			ε Leonis.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 9	^m 14	[°] 58 ['] 48	^h 9	^m 22	[°] 8 ['] 10	^h 9	^m 25	[°] 52 ['] 10	^h 9	^m 35	[°] 10 ['] 23
Jan. 1	8 ^s .98	22 ^s .5	36	8 ^s .10	37 ^s .8	21	25 ^s .82	47 ^s .9	10	13 ^s .52	47 ^s .4	13
11	9 ^s .23	26 ^s .1	36	8 ^s .32	39 ^s .9	21	26 ^s .17	48 ^s .9	10	13 ^s .76	46 ^s .1	13
21	9 ^s .41	29 ^s .8	37	8 ^s .49	41 ^s .9	20	26 ^s .45	50 ^s .2	13	13 ^s .96	45 ^s .0	11
31	9 ^s .50	33 ^s .5	37	8 ^s .61	43 ^s .8	19	26 ^s .66	51 ^s .9	17	14 ^s .11	44 ^s .2	8
Feb. 10			37			17			19			6
20	9 ^s .50	37 ^s .2	35	8 ^s .69	45 ^s .5	14	26 ^s .79	53 ^s .8	20	14 ^s .21	43 ^s .6	3
Mar. 2	9 ^s .43	40 ^s .7	35	8 ^s .72	46 ^s .9	12	26 ^s .84	55 ^s .8	21	14 ^s .26	43 ^s .3	2
12	9 ^s .28	44 ^s .0	33	8 ^s .70	48 ^s .1	9	26 ^s .82	57 ^s .9	21	14 ^s .26	43 ^s .1	1
	9 ^s .07	46 ^s .9	29	8 ^s .64	49 ^s .0	9	26 ^s .73	60 ^s .0	21	14 ^s .22	43 ^s .2	
			27			9			20			3
Apr. 22	8 ^s .80	49 ^s .5	21	8 ^s .55	49 ^s .7	7	26 ^s .57	62 ^s .0	18	14 ^s .15	43 ^s .5	3
1	8 ^s .49	51 ^s .6	21	8 ^s .43	50 ^s .1	4	26 ^s .37	63 ^s .8	18	14 ^s .04	43 ^s .8	3
11	8 ^s .15	53 ^s .3	17	8 ^s .29	50 ^s .3	2	26 ^s .14	65 ^s .3	15	13 ^s .92	44 ^s .3	5
21	7 ^s .79	54 ^s .5	12	8 ^s .15	50 ^s .3	0	25 ^s .89	66 ^s .5	12	13 ^s .78	44 ^s .8	5
			7			3			8			6
May 1	7 ^s .42	55 ^s .2	2	8 ^s .00	50 ^s .0	4	25 ^s .63	67 ^s .3	4	13 ^s .64	45 ^s .4	5
11	7 ^s .05	55 ^s .4	3	7 ^s .86	49 ^s .6	6	25 ^s .38	67 ^s .7	1	13 ^s .51	45 ^s .9	6
21	6 ^s .69	55 ^s .1	9	7 ^s .73	49 ^s .0	8	25 ^s .14	67 ^s .8	4	13 ^s .39	46 ^s .5	6
31	6 ^s .35	54 ^s .2	13	7 ^s .62	48 ^s .2	10	24 ^s .93	67 ^s .4	7	13 ^s .28	47 ^s .1	5
June 10	6 ^s .04	52 ^s .9	17	7 ^s .52	47 ^s .2	11	24 ^s .75	66 ^s .7	10	13 ^s .19	47 ^s .6	5
20	5 ^s .77	51 ^s .2	22	7 ^s .45	46 ^s .1	11	24 ^s .61	65 ^s .7	14	13 ^s .12	48 ^s .1	5
30	5 ^s .54	49 ^s .0	25	7 ^s .41	45 ^s .0	12	24 ^s .51	64 ^s .3	16	13 ^s .07	48 ^s .6	5
July 10	5 ^s .36	46 ^s .5	28	7 ^s .39	43 ^s .8	13	24 ^s .46	62 ^s .7	18	13 ^s .04	49 ^s .0	4
			13			13			0			3
20	5 ^s .23	43 ^s .7	30	7 ^s .39	42 ^s .5	13	24 ^s .46	60 ^s .9	21	13 ^s .05	49 ^s .3	2
30	5 ^s .16	40 ^s .7	33	7 ^s .42	41 ^s .2	13	24 ^s .50	58 ^s .8	26	13 ^s .08	49 ^s .5	1
Aug. 9	5 ^s .16	37 ^s .4	30	7 ^s .48	39 ^s .9	11	24 ^s .59	56 ^s .6	22	13 ^s .14	49 ^s .6	0
19	5 ^s .23	34 ^s .4	30	7 ^s .57	38 ^s .8	8	24 ^s .74	54 ^s .0	24	13 ^s .23	49 ^s .6	2
			13			12			19			10
29	5 ^s .36	31 ^s .4	27	7 ^s .69	38 ^s .0	7	24 ^s .93	51 ^s .6	25	13 ^s .35	49 ^s .4	4
Sept. 8	5 ^s .56	28 ^s .7	24	7 ^s .84	37 ^s .3	4	25 ^s .17	49 ^s .1	24	13 ^s .49	49 ^s .0	5
18	5 ^s .83	26 ^s .3	19	8 ^s .01	36 ^s .9	1	25 ^s .45	46 ^s .7	24	13 ^s .67	48 ^s .5	8
28	6 ^s .16	24 ^s .4	14	8 ^s .22	36 ^s .8	2	25 ^s .77	44 ^s .3	23	13 ^s .87	47 ^s .7	10
Oct. 8	6 ^s .54	23 ^s .0	9	8 ^s .46	37 ^s .0	6	26 ^s .13	42 ^s .0	21	14 ^s .10	46 ^s .7	12
18	6 ^s .97	22 ^s .1	2	8 ^s .72	37 ^s .6	10	26 ^s .53	39 ^s .9	19	14 ^s .36	45 ^s .5	14
28	7 ^s .44	21 ^s .9	5	9 ^s .01	38 ^s .6	13	26 ^s .97	38 ^s .0	17	14 ^s .65	44 ^s .1	16
Nov. 7	7 ^s .93	22 ^s .4	11	9 ^s .31	39 ^s .9	16	27 ^s .43	36 ^s .3	13	14 ^s .96	42 ^s .5	17
			32			23			3			16
17	8 ^s .42	23 ^s .5	17	9 ^s .62	41 ^s .5	18	27 ^s .91	35 ^s .0	10	15 ^s .28	40 ^s .8	17
27	8 ^s .90	25 ^s .2	22	9 ^s .94	43 ^s .3	20	28 ^s .40	34 ^s .0	5	15 ^s .61	39 ^s .1	18
Dec. 7	9 ^s .36	27 ^s .4	28	10 ^s .25	45 ^s .3	22	28 ^s .88	33 ^s .5	2	15 ^s .94	37 ^s .3	16
17	9 ^s .78	30 ^s .2	32	10 ^s .55	47 ^s .5	23	29 ^s .34	33 ^s .3	3	16 ^s .25	35 ^s .7	16
			36			28			43			16
27	10 ^s .14	33 ^s .4	34	10 ^s .83	49 ^s .8	24	29 ^s .77	33 ^s .6	8	16 ^s .55	34 ^s .1	14
37	10 ^s .43	36 ^s .8	34	11 ^s .07	52 ^s .0	22	30 ^s .15	34 ^s .4	8	16 ^s .82	32 ^s .7	14

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Leonis.			μ Leonis.			σ Leonis.			α Leonis. (Regulus)		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 9	^m 39	^o 24	^h 9	^m 46	^o 26	^h 9	^m 54	^o 8	^h 10	^m 2	^o 12
Jan. 1	32° 93	60° 9	6	26° 84	40° 2	5	20° 78	34° 5	15	27° 45	32° 2	13
11	33° 20	60° 3	6	27° 12	39° 7	5	21° 03	33° 0	15	27° 71	30° 9	13
21	33° 42	60° 0	3	27° 34	39° 5	2	21° 24	31° 8	12	27° 93	29° 8	11
31	33° 59	60° 0	0	27° 52	39° 6	1	21° 41	30° 8	10	28° 11	29° 1	7
Feb. 10	33° 70	60° 3	3	27° 65	40° 0	4	21° 53	30° 1	7	28° 24	28° 6	5
20	33° 76	60° 8	5	27° 72	40° 6	6	21° 60	29° 6	5	28° 32	28° 3	3
Mar. 2	33° 77	61° 5	7	27° 74	41° 4	8	21° 62	29° 3	3	28° 35	28° 3	0
12	33° 74	62° 3	8	27° 70	42° 4	10	21° 60	29° 3	0	28° 34	28° 5	2
22	33° 66	63° 2	9	27° 63	43° 5	11	21° 54	29° 4	1	28° 28	28° 9	4
Apr. 1	33° 55	64° 2	10	27° 52	44° 6	11	21° 45	29° 7	3	28° 20	29° 4	5
11	33° 41	65° 2	10	27° 39	45° 6	10	21° 34	30° 1	4	28° 09	30° 0	6
21	33° 27	66° 1	9	27° 25	46° 6	10	21° 21	30° 6	5	27° 97	30° 6	6
May 1	33° 12	66° 8	7	27° 10	47° 4	8	21° 08	31° 2	6	27° 84	31° 2	6
11	32° 97	67° 5	7	26° 95	48° 1	7	20° 95	31° 8	6	27° 71	31° 9	7
21	32° 83	68° 0	5	26° 81	48° 6	5	20° 83	32° 4	6	27° 58	32° 5	6
31	32° 71	68° 4	4	26° 68	49° 0	4	20° 72	33° 0	6	27° 47	33° 1	6
June 10	32° 61	68° 6	2	26° 57	49° 2	2	20° 62	33° 6	6	27° 37	33° 6	5
20	32° 53	68° 6	0	26° 49	49° 2	0	20° 54	34° 1	5	27° 28	34° 1	5
30	32° 48	68° 5	1	26° 43	49° 0	2	20° 48	34° 6	5	27° 22	34° 4	3
July 10	32° 46	68° 3	2	26° 40	48° 6	4	20° 45	35° 1	5	27° 18	34° 7	3
20	32° 46	67° 9	4	26° 39	48° 1	5	20° 44	35° 5	4	27° 16	34° 9	2
30	32° 49	67° 3	6	26° 41	47° 4	7	20° 45	35° 8	3	27° 17	35° 0	1
Aug. 9	32° 55	66° 6	9	26° 46	46° 6	8	20° 49	36° 0	2	27° 20	34° 9	1
19	32° 65	65° 7	9	26° 55	45° 5	11	20° 56	36° 0	0	27° 26	34° 7	2
29	32° 77	64° 7	10	26° 67	44° 3	12	20° 65	35° 9	1	27° 36	34° 3	4
Sept. 8	32° 92	63° 5	12	26° 82	43° 0	13	20° 78	35° 6	3	27° 48	33° 8	5
18	33° 11	62° 2	13	27° 00	41° 6	14	20° 94	35° 1	5	27° 63	33° 0	8
28	33° 33	60° 7	15	27° 21	40° 0	16	21° 12	34° 3	8	27° 81	32° 0	10
Oct. 8	33° 58	59° 2	15	27° 46	38° 3	17	21° 34	33° 3	10	28° 02	30° 8	12
18	33° 85	57° 5	17	27° 73	36° 5	18	21° 59	32° 1	12	28° 27	29° 5	13
28	34° 16	55° 8	17	28° 04	34° 7	18	21° 86	30° 7	14	28° 54	27° 9	16
Nov. 7	34° 49	54° 1	17	28° 37	32° 9	18	22° 16	29° 1	16	28° 84	26° 2	17
17	34° 83	52° 4	17	28° 72	31° 2	17	22° 48	27° 3	18	29° 16	24° 4	18
27	35° 18	50° 8	16	29° 08	29° 6	16	22° 81	25° 5	18	29° 49	22° 6	18
Dec. 7	35° 53	49° 3	15	29° 44	28° 1	15	23° 14	23° 7	18	29° 83	20° 8	18
17	35° 87	48° 0	13	29° 79	26° 8	13	23° 46	21° 9	18	30° 15	19° 0	18
27	36° 19	47° 0	10	30° 11	25° 9	9	23° 76	20° 2	17	30° 46	17° 4	16
37	36° 48	46° 3	7	30° 40	25° 2	7	24° 04	18° 6	16	30° 76	16° 0	14

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	γ^1 Leonis.			μ Hydræ.			ρ Leonis.			η Argûs.		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. S.	
	h m o			h m o			h m o			h m o		
	10 13	20 23		10 20	16 16		10 26	9 52		10 40	59 5	
Jan. 1	50° 89	65° 6		43° 34	4° 9		57° 77	37° 9		46° 33	45° 2	
11	51° 17	64° 6		43° 60	7° 4		58° 04	36° 4		46° 73	48° 3	
21	51° 42	64° 0		43° 82	9° 9		58° 28	35° 1		47° 07	51° 6	
31	51° 62	63° 6		44° 00	12° 3		58° 48	34° 1		47° 33	55° 2	
Feb. 10	51° 77	63° 5		44° 14	14° 5		58° 63	33° 3		47° 51	58° 9	
20	51° 86	63° 7		44° 22	16° 5		58° 74	32° 9		47° 62	62° 6	
Mar. 2	51° 91	63° 2		44° 26	18° 3		58° 79	32° 7		47° 65	66° 2	
12	51° 91	64° 9		44° 25	19° 8		58° 80	32° 7		47° 61	69° 6	
Apr. 22	51° 87	65° 7		44° 20	21° 0		58° 77	32° 9		47° 50	72° 8	
1	51° 79	66° 5		44° 13	22° 0		58° 71	33° 3		47° 34	75° 7	
11	51° 68	67° 4		44° 03	22° 7		58° 62	33° 8		47° 12	78° 3	
21	51° 56	68° 3		43° 91	23° 1		58° 52	34° 4		46° 86	80° 5	
May 1	51° 43	69° 2		43° 78	23° 3		58° 40	35° 0		46° 58	82° 2	
11	51° 30	70° 0		43° 64	23° 2		58° 28	35° 6		46° 27	83° 5	
21	51° 17	70° 7		43° 51	22° 9		58° 16	36° 3		45° 94	84° 3	
31	51° 05	71° 2		43° 39	22° 4		58° 05	36° 9		45° 61	84° 6	
June 10	50° 94	71° 6		43° 27	21° 6		57° 94	37° 5		45° 29	84° 4	
20	50° 85	71° 9		43° 17	20° 6		57° 85	38° 1		44° 97	83° 7	
30	50° 78	72° 0		43° 08	19° 5		57° 78	38° 5		44° 67	82° 5	
July 10	50° 73	72° 0		43° 01	18° 2		57° 72	38° 9		44° 40	80° 9	
20	50° 70	71° 8		42° 96	16° 8		57° 68	39° 2		44° 16	78° 9	
30	50° 70	71° 4		42° 93	15° 4		57° 67	39° 4		43° 97	76° 5	
Aug. 9	50° 72	70° 9		42° 93	14° 0		57° 68	39° 5		43° 82	73° 9	
19	50° 77	70° 2		42° 95	12° 7		57° 71	39° 4		43° 73	71° 1	
29	50° 86	69° 2		43° 01	11° 3		57° 78	39° 1		43° 71	68° 2	
Sept. 8	50° 97	68° 1		43° 10	10° 2		57° 87	38° 6		43° 77	65° 1	
18	51° 12	66° 9		43° 22	9° 4		58° 00	38° 0		43° 89	62° 4	
28	51° 30	65° 5		43° 38	8° 9		58° 16	37° 1		44° 09	60° 0	
Oct. 8	51° 51	64° 0		43° 58	8° 7		58° 35	36° 0		44° 36	57° 9	
18	51° 76	62° 3		43° 81	8° 9		58° 57	34° 6		44° 70	56° 2	
28	52° 04	60° 4		44° 07	9° 5		58° 83	33° 1		45° 10	55° 1	
Nov. 7	52° 35	58° 5		44° 36	10° 5		59° 12	31° 4		45° 55	54° 6	
17	52° 68	56° 6		44° 67	11° 8		59° 43	29° 5		46° 04	54° 7	
27	53° 02	54° 8		45° 00	13° 5		59° 76	27° 6		46° 55	55° 4	
Dec. 7	53° 37	53° 0		45° 33	15° 5		60° 09	25° 6		47° 07	56° 7	
17	53° 71	51° 4		45° 66	17° 8		60° 42	23° 7		47° 58	58° 6	
27	54° 04	50° 0		45° 97	20° 2		60° 74	21° 9		48° 05	61° 1	
37	54° 35	48° 8		46° 25	22° 7		61° 03	20° 3		48° 48	64° 0	

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Leonis.			δ Leonis.			α Ursæ Majoris.			γ Leonis.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 10 ^m 43	[°] 11 ['] 7		^h 10 ^m 54	[°] 4 ['] 12		^h 10 ^m 56	[°] 62 ['] 20		^h 10 ^m 59	[°] 7 ['] 55	
Jan. 1	25 ^s 00	55 ^s 8		49 ^s 31	49 ^s 2		52 ^s 04	48 ^s 0		17 ^s 08	69 ^s 2	
11	25 ^s 29	54 ^s 3		49 ^s 60	47 ^s 3		52 ^s 59	48 ^s 5		17 ^s 38	67 ^s 5	
21	25 ^s 55	53 ^s 0		49 ^s 85	45 ^s 7		53 ^s 08	49 ^s 4		17 ^s 64	66 ^s 0	
31	25 ^s 76	52 ^s 0		50 ^s 07	44 ^s 3		53 ^s 50	50 ^s 9		17 ^s 86	64 ^s 8	
Feb. 10	25 ^s 92	51 ^s 3		50 ^s 24	43 ^s 2		53 ^s 83	52 ^s 9		18 ^s 04	63 ^s 9	
20	26 ^s 04	50 ^s 9		50 ^s 37	42 ^s 3		54 ^s 07	55 ^s 2		18 ^s 17	63 ^s 2	
Mar. 2	26 ^s 12	50 ^s 7		50 ^s 45	41 ^s 7		54 ^s 21	57 ^s 7		18 ^s 26	62 ^s 8	
12	26 ^s 15	50 ^s 8		50 ^s 49	41 ^s 3		54 ^s 26	60 ^s 4		18 ^s 30	62 ^s 7	
Apr. 22	26 ^s 13	51 ^s 1		50 ^s 49	41 ^s 2		54 ^s 22	63 ^s 1		18 ^s 30	62 ^s 8	
1	26 ^s 08	51 ^s 6		50 ^s 45	41 ^s 3		54 ^s 10	65 ^s 7		18 ^s 27	63 ^s 1	
11	26 ^s 01	52 ^s 1		50 ^s 39	41 ^s 5		53 ^s 90	68 ^s 1		18 ^s 21	63 ^s 5	
21	25 ^s 91	52 ^s 8		50 ^s 30	41 ^s 9		53 ^s 65	70 ^s 2		18 ^s 13	64 ^s 1	
May 1	25 ^s 80	53 ^s 5		50 ^s 20	42 ^s 4		53 ^s 36	72 ^s 0		18 ^s 03	64 ^s 7	
11	25 ^s 69	54 ^s 2		50 ^s 09	43 ^s 0		53 ^s 04	73 ^s 4		17 ^s 92	65 ^s 4	
21	25 ^s 57	54 ^s 9		49 ^s 98	43 ^s 6		52 ^s 71	74 ^s 3		17 ^s 81	66 ^s 0	
31	25 ^s 46	55 ^s 5		49 ^s 87	44 ^s 2		52 ^s 37	74 ^s 8		17 ^s 70	66 ^s 7	
June 10	25 ^s 35	56 ^s 2		49 ^s 77	44 ^s 9		52 ^s 04	74 ^s 7		17 ^s 59	67 ^s 4	
20	25 ^s 26	56 ^s 7		49 ^s 67	45 ^s 5		51 ^s 74	74 ^s 2		17 ^s 49	68 ^s 0	
30	25 ^s 18	57 ^s 1		49 ^s 58	46 ^s 1		51 ^s 47	73 ^s 2		17 ^s 40	68 ^s 5	
July 10	25 ^s 11	57 ^s 5		49 ^s 51	46 ^s 7		51 ^s 23	71 ^s 8		17 ^s 33	68 ^s 9	
20	25 ^s 06	57 ^s 7		49 ^s 46	47 ^s 2		51 ^s 04	69 ^s 9		17 ^s 27	69 ^s 3	
30	25 ^s 03	57 ^s 9		49 ^s 42	47 ^s 7		50 ^s 89	67 ^s 7		17 ^s 23	69 ^s 6	
Aug. 9	25 ^s 02	57 ^s 9		49 ^s 40	48 ^s 0		50 ^s 80	65 ^s 2		17 ^s 21	69 ^s 7	
19	25 ^s 04	57 ^s 7		49 ^s 40	48 ^s 2		50 ^s 76	62 ^s 4		17 ^s 21	69 ^s 7	
Sept. 29	25 ^s 09	57 ^s 3		49 ^s 43	48 ^s 2		50 ^s 78	59 ^s 4		17 ^s 24	69 ^s 5	
8	25 ^s 17	56 ^s 7		49 ^s 50	48 ^s 1		50 ^s 88	56 ^s 0		17 ^s 30	69 ^s 1	
18	25 ^s 28	55 ^s 9		49 ^s 60	47 ^s 7		51 ^s 04	52 ^s 7		17 ^s 39	68 ^s 5	
28	25 ^s 42	54 ^s 9		49 ^s 73	47 ^s 1		51 ^s 27	49 ^s 4		17 ^s 52	67 ^s 7	
Oct. 8	25 ^s 60	53 ^s 7		49 ^s 89	46 ^s 2		51 ^s 57	46 ^s 1		17 ^s 68	66 ^s 6	
18	25 ^s 81	52 ^s 3		50 ^s 09	45 ^s 1		51 ^s 93	43 ^s 0		17 ^s 88	65 ^s 2	
28	26 ^s 06	50 ^s 7		50 ^s 33	43 ^s 7		52 ^s 36	40 ^s 0		18 ^s 11	63 ^s 7	
Nov. 7	26 ^s 34	48 ^s 9		50 ^s 60	42 ^s 1		52 ^s 85	37 ^s 2		18 ^s 37	62 ^s 0	
17	26 ^s 65	46 ^s 9		50 ^s 89	40 ^s 3		53 ^s 39	34 ^s 8		18 ^s 66	60 ^s 1	
27	26 ^s 97	44 ^s 9		51 ^s 21	38 ^s 3		53 ^s 97	32 ^s 8		18 ^s 98	58 ^s 1	
Dec. 7	27 ^s 30	42 ^s 9		51 ^s 54	36 ^s 3		54 ^s 57	31 ^s 3		19 ^s 31	56 ^s 0	
17	27 ^s 64	41 ^s 0		51 ^s 87	34 ^s 2		55 ^s 18	30 ^s 3		19 ^s 65	54 ^s 0	
27	27 ^s 96	39 ^s 2		52 ^s 19	32 ^s 2		55 ^s 78	29 ^s 9		19 ^s 98	52 ^s 0	
37	28 ^s 27	37 ^s 5		52 ^s 50	30 ^s 3		56 ^s 36	30 ^s 0		20 ^s 29	50 ^s 2	

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	δ Leonis.			δ Crateris.			τ Leonis.			λ Draconis.		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s	^h ^m ^s
	11 8 21 7	11 13 14 10	11 22 3 27	11 24 69 56								
Jan. 1	11.82 50.5 13	47.16 32.8 24	13.23 65.4 19	47.97 22.9 4								
11	12.14 49.2 9	47.45 35.2 23	13.53 63.5 17	48.71 23.3 9								
21	12.42 48.3 6	47.72 37.5 22	13.80 61.8 15	49.38 24.2 15								
31	12.67 47.7 2	47.95 39.7 21	14.04 60.3 12	49.97 25.7 20								
Feb. 10	12.87 47.5 1	48.13 41.8 20	14.24 59.1 10	50.46 27.7 24								
20	13.02 47.6 4	48.27 43.8 17	14.39 58.1 7	50.84 30.1 27								
Mar. 2	13.12 48.0 7	48.37 45.5 15	14.50 57.4 4	51.09 32.8 29								
12	13.17 48.7 9	48.42 47.0 12	14.57 57.0 2	51.22 35.7 29								
22	13.19 49.6 10	48.43 48.2 10	14.59 56.8 1	51.22 38.6 29								
Apr. 1	13.16 50.6 11	48.41 49.2 7	14.58 56.9 2	51.10 41.5 27								
11	13.10 51.7 11	48.36 49.9 5	14.54 57.1 3	50.88 44.2 24								
21	13.02 52.8 11	48.28 50.4 3	14.48 57.4 5	50.58 46.6 21								
May 1	12.91 53.9 10	48.19 50.7 0	14.40 57.9 5	50.20 48.7 17								
11	12.80 54.9 9	48.08 50.7 1	14.30 58.4 7	49.77 50.4 12								
21	12.68 55.8 8	47.97 50.6 4	14.20 59.1 6	49.30 51.6 6								
31	12.56 56.6 6	47.86 50.2 6	14.10 59.7 7	48.82 52.2 2								
June 10	12.44 57.2 4	47.74 49.6 7	13.99 60.4 6	48.33 52.4 4								
20	12.34 57.6 3	47.63 48.9 8	13.89 61.0 9	47.86 52.0 9								
30	12.24 57.9 0	47.53 48.1 10	13.80 61.7 6	47.42 51.1 14								
July 10	12.16 57.9 1	47.44 47.1 11	13.71 62.3 5	47.02 49.7 19								
20	12.09 57.8 4	47.36 46.0 11	13.64 62.8 4	46.67 47.8 22								
30	12.04 57.4 5	47.30 44.9 12	13.58 63.2 2	46.37 45.6 26								
Aug. 9	12.01 56.9 7	47.25 43.7 11	13.54 63.6 2	46.14 43.0 30								
19	12.01 56.2 10	47.23 42.6 10	13.52 63.8 1	45.99 40.0 32								
29	12.03 55.2 13	47.23 41.6 10	13.53 63.8 2	45.92 36.8 34								
Sept. 8	12.09 53.9 14	47.27 40.6 10	13.56 63.6 3	45.94 33.4 39								
18	12.18 52.5 16	47.34 39.9 7	13.63 63.2 4	46.04 29.5 36								
28	12.30 50.9 18	47.45 39.5 4	13.73 62.6 8	46.25 25.9 35								
Oct. 8	12.46 49.1 19	47.60 39.3 2	13.87 61.8 11	46.55 22.4 35								
18	12.66 47.2 21	47.79 39.5 5	14.05 60.7 13	46.94 18.9 33								
28	12.90 45.1 22	48.01 40.0 9	14.27 59.4 16	47.42 15.6 30								
Nov. 7	13.17 42.9 22	48.27 40.9 12	14.52 57.8 18	47.99 12.6 27								
17	13.47 40.7 22	48.56 42.1 16	14.80 56.0 20	48.64 9.9 23								
27	13.80 38.5 21	48.88 43.7 19	15.11 54.0 21	49.35 7.6 17								
Dec. 7	14.15 36.4 19	49.21 45.6 21	15.43 51.9 21	50.11 5.9 12								
17	14.50 34.5 17	49.54 47.7 22	15.76 49.8 21	50.89 4.7 6								
27	14.85 32.8 15	49.87 49.9 24	16.09 47.7 20	51.67 4.1 0								
37	15.18 31.3 15	50.19 52.3 24	16.41 45.7 20	52.43 4.1 0								

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Leonis.			β Leonis.			γ Ursæ Majoris.			δ Virginis.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 11	^m 31	^o 0	^h 11	^m 43	^o 15	^h 11	^m 47	^o 54	^h 11	^m 55	^o 7
Jan. 1	15.36	35.7	23.19	32.0	58.63	31.6	10.42	61.1				
11	15.66	37.7	23.51	30.4	59.11	31.1	10.74	59.2	19			
21	15.94	39.6	23.81	29.0	59.56	31.2	11.03	57.5	17			
31	16.18	41.3	24.07	28.0	59.96	31.9	11.29	56.1	14			
Feb. 10	16.39	42.8	24.29	27.3	60.31	33.1	11.51	55.0	11			
20	16.55	44.0	24.47	27.0	60.59	34.8	11.70	54.2	8			
Mar. 2	16.67	44.9	24.61	27.0	60.79	36.8	11.85	53.7	5			
12	16.74	45.5	24.70	27.2	60.92	39.1	11.95	53.4	3			
Apr. 22	16.77	45.9	24.75	27.7	60.98	41.6	12.01	53.4	0			
1	16.77	46.1	24.75	28.4	60.97	44.2	12.03	53.7	3			
11	16.74	46.1	24.73	29.3	60.90	46.7	12.02	54.1	4			
21	16.68	45.9	24.68	30.3	60.78	49.0	11.98	54.7	6			
May 1	16.60	45.6	24.60	31.3	60.61	51.2	11.92	55.4	7			
11	16.51	45.2	24.51	32.3	60.41	53.0	11.84	56.1	8			
21	16.42	44.6	24.41	33.2	60.19	54.5	11.76	56.9	7			
31	16.32	44.0	24.31	34.0	59.95	55.6	11.67	57.6	8			
June 10	16.21	43.4	24.20	34.8	59.71	56.3	11.57	58.4	6			
20	16.11	42.8	24.09	35.4	59.47	56.5	11.46	59.0	6			
30	16.02	42.1	23.99	35.9	59.24	56.2	11.36	59.6	5			
July 10	15.93	41.4	23.90	36.2	59.02	55.5	11.27	60.1	4			
20	15.85	40.8	23.81	36.4	58.83	54.4	11.18	60.5	3			
30	15.78	40.2	23.73	36.3	58.66	52.9	11.10	60.8	2			
Aug. 9	15.73	39.7	23.68	36.1	58.52	51.0	11.04	61.0	0			
19	15.71	39.3	23.64	35.7	58.42	48.7	10.99	61.0	2			
Sept. 29	15.70	39.1	23.62	35.1	58.36	46.1	10.97	60.8	4			
8	15.73	39.0	23.63	34.2	58.35	43.3	10.97	60.4	6			
18	15.79	39.2	23.68	33.1	58.39	40.2	11.00	59.8	9			
28	15.88	39.6	23.76	31.7	58.49	36.7	11.07	58.9	11			
Oct. 8	16.01	40.2	23.88	30.2	58.65	33.4	11.18	57.8	13			
18	16.17	41.1	24.04	28.5	58.86	30.1	11.32	56.5	16			
28	16.38	42.3	24.24	26.5	59.14	26.8	11.51	54.9	18			
Nov. 7	16.62	43.8	24.48	24.4	59.48	23.7	11.74	53.1	20			
17	16.90	45.5	24.76	22.2	59.87	20.7	12.00	51.1	21			
27	17.21	47.4	25.06	20.0	60.30	18.1	12.30	49.0	21			
Dec. 7	17.53	49.4	25.39	17.7	60.77	15.8	12.62	46.9	22			
17	17.86	51.6	25.73	15.6	61.27	13.9	12.95	44.7	22			
27	18.19	53.7	26.07	13.6	61.77	12.6	13.28	42.6	20			
37	18.51	55.8	26.40	11.8	62.26	11.8	13.61	40.6	20			

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	ε Corvi.			β Chamæleontis.			γ Virginis.			α ¹ Crucis.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.	
	h m	o	'	h m	o	'	h m	o	'	h m	o	'
	12 4	21 59		12 11	78 41		12 14	0 2		12 20	62 28	
Jan. 1	24 ^h 38 ^m	55 ^o 4 [']		52 ^h 35 ^m	18 ^o 4 [']		12 ^h 8 ^m	54 ^o 7 [']		25 ^h 37 ^m	37 ^o 3 [']	
11	24 ^h 71 ^m	57 ^o 8 [']	24	53 ^h 50 ^m	20 ^o 2 [']	18	13 ^h 13 ^m	56 ^o 7 [']	20	25 ^h 93 ^m	39 ^o 3 [']	20
21	25 ^h 02 ^m	60 ^o 2 [']	24	54 ^h 55 ^m	22 ^o 6 [']	24	13 ^h 43 ^m	58 ^o 6 [']	19	26 ^h 45 ^m	41 ^o 8 [']	25
31	25 ^h 29 ^m	62 ^o 6 [']	24	55 ^h 48 ^m	25 ^o 4 [']	28	13 ^h 70 ^m	60 ^o 4 [']	18	26 ^h 91 ^m	44 ^o 6 [']	28
Feb. 10	25 ^h 52 ^m	65 ^o 0 [']	24	56 ^h 27 ^m	28 ^o 6 [']	32	13 ^h 93 ^m	61 ^o 9 [']	15	27 ^h 31 ^m	47 ^o 8 [']	32
20	25 ^h 72 ^m	67 ^o 3 [']	23	56 ^h 91 ^m	32 ^o 1 [']	35	14 ^h 13 ^m	63 ^o 1 [']	12	27 ^h 64 ^m	51 ^o 2 [']	34
Mar. 2	25 ^h 87 ^m	69 ^o 4 [']	21	57 ^h 38 ^m	35 ^o 8 [']	37	14 ^h 29 ^m	64 ^o 1 [']	10	27 ^h 90 ^m	54 ^o 6 [']	34
12	25 ^h 97 ^m	71 ^o 4 [']	20	57 ^h 69 ^m	39 ^o 6 [']	38	14 ^h 41 ^m	64 ^o 8 [']	7	28 ^h 08 ^m	58 ^o 2 [']	36
Apr. 22	26 ^h 04 ^m	73 ^o 1 [']	17	57 ^h 82 ^m	43 ^o 4 [']	38	14 ^h 49 ^m	65 ^o 2 [']	4	28 ^h 19 ^m	61 ^o 7 [']	35
1	26 ^h 07 ^m	74 ^o 6 [']	15	57 ^h 78 ^m	47 ^o 2 [']	38	14 ^h 52 ^m	65 ^o 4 [']	2	28 ^h 23 ^m	65 ^o 1 [']	34
11	26 ^h 06 ^m	75 ^o 8 [']	12	57 ^h 59 ^m	50 ^o 8 [']	36	14 ^h 53 ^m	65 ^o 4 [']	0	28 ^h 20 ^m	68 ^o 3 [']	32
21	26 ^h 03 ^m	76 ^o 8 [']	10	57 ^h 25 ^m	54 ^o 2 [']	34	14 ^h 51 ^m	65 ^o 2 [']	2	28 ^h 11 ^m	71 ^o 3 [']	30
May 1	25 ^h 97 ^m	77 ^o 6 [']	8	56 ^h 76 ^m	57 ^o 3 [']	31	14 ^h 47 ^m	64 ^o 8 [']	4	27 ^h 97 ^m	74 ^o 0 [']	27
11	25 ^h 90 ^m	78 ^o 1 [']	5	56 ^h 15 ^m	60 ^o 1 [']	28	14 ^h 41 ^m	64 ^o 4 [']	4	27 ^h 77 ^m	76 ^o 3 [']	23
21	25 ^h 81 ^m	78 ^o 4 [']	3	55 ^h 43 ^m	62 ^o 5 [']	24	14 ^h 34 ^m	63 ^o 8 [']	6	27 ^h 53 ^m	78 ^o 2 [']	19
31	25 ^h 71 ^m	78 ^o 4 [']	0	54 ^h 62 ^m	64 ^o 4 [']	19	14 ^h 25 ^m	63 ^o 2 [']	6	27 ^h 25 ^m	79 ^o 7 [']	15
June 10	25 ^h 59 ^m	78 ^o 2 [']	2	53 ^h 73 ^m	65 ^o 8 [']	14	14 ^h 16 ^m	62 ^o 6 [']	6	26 ^h 94 ^m	80 ^o 8 [']	11
20	25 ^h 48 ^m	77 ^o 8 [']	4	52 ^h 79 ^m	66 ^o 7 [']	9	14 ^h 06 ^m	61 ^o 9 [']	7	26 ^h 61 ^m	81 ^o 5 [']	7
30	25 ^h 36 ^m	77 ^o 2 [']	6	51 ^h 82 ^m	67 ^o 0 [']	3	13 ^h 96 ^m	61 ^o 3 [']	6	26 ^h 26 ^m	81 ^o 5 [']	0
July 10	25 ^h 24 ^m	76 ^o 4 [']	8	50 ^h 84 ^m	66 ^o 8 [']	2	13 ^h 86 ^m	60 ^o 7 [']	6	25 ^h 91 ^m	81 ^o 1 [']	4
20	25 ^h 13 ^m	75 ^o 4 [']	10	49 ^h 89 ^m	66 ^o 0 [']	8	13 ^h 76 ^m	60 ^o 1 [']	6	25 ^h 56 ^m	80 ^o 2 [']	9
30	25 ^h 02 ^m	74 ^o 3 [']	11	48 ^h 99 ^m	64 ^o 7 [']	13	13 ^h 68 ^m	59 ^o 6 [']	5	25 ^h 22 ^m	78 ^o 9 [']	13
Aug. 9	24 ^h 93 ^m	73 ^o 1 [']	12	48 ^h 18 ^m	63 ^o 0 [']	17	13 ^h 60 ^m	59 ^o 2 [']	4	24 ^h 91 ^m	77 ^o 2 [']	17
19	24 ^h 86 ^m	71 ^o 8 [']	13	47 ^h 48 ^m	60 ^o 8 [']	22	13 ^h 54 ^m	58 ^o 9 [']	3	24 ^h 65 ^m	75 ^o 1 [']	21
Sept. 29	24 ^h 81 ^m	70 ^o 5 [']	13	46 ^h 92 ^m	58 ^o 2 [']	26	13 ^h 49 ^m	58 ^o 7 [']	2	24 ^h 45 ^m	72 ^o 7 [']	24
8	24 ^h 79 ^m	69 ^o 3 [']	12	46 ^h 52 ^m	55 ^o 4 [']	28	13 ^h 47 ^m	58 ^o 6 [']	1	24 ^h 31 ^m	70 ^o 1 [']	26
18	24 ^h 80 ^m	68 ^o 2 [']	11	46 ^h 31 ^m	52 ^o 4 [']	30	13 ^h 48 ^m	58 ^o 8 [']	2	24 ^h 24 ^m	67 ^o 4 [']	27
28	24 ^h 86 ^m	67 ^o 3 [']	9	46 ^h 31 ^m	49 ^o 1 [']	33	13 ^h 54 ^m	59 ^o 3 [']	5	{4:3}	{4:3}	27
Oct. 8	24 ^h 96 ^m	66 ^o 6 [']	7	46 ^h 53 ^m	46 ^o 1 [']	30	13 ^h 62 ^m	59 ^o 9 [']	6	24 ^h 36 ^m	61 ^o 8 [']	26
18	25 ^h 11 ^m	66 ^o 2 [']	4	46 ^h 96 ^m	43 ^o 3 [']	28	13 ^h 75 ^m	60 ^o 8 [']	9	24 ^h 56 ^m	59 ^o 5 [']	23
28	25 ^h 30 ^m	66 ^o 2 [']	0	47 ^h 58 ^m	40 ^o 9 [']	24	13 ^h 92 ^m	62 ^o 0 [']	12	24 ^h 85 ^m	57 ^o 5 [']	20
Nov. 7	25 ^h 53 ^m	66 ^o 6 [']	4	48 ^h 39 ^m	38 ^o 9 [']	20	14 ^h 13 ^m	63 ^o 5 [']	15	25 ^h 22 ^m	55 ^o 9 [']	16
17	25 ^h 80 ^m	67 ^o 4 [']	8	49 ^h 36 ^m	37 ^o 4 [']	15	14 ^h 38 ^m	65 ^o 2 [']	17	25 ^h 67 ^m	54 ^o 8 [']	11
27	26 ^h 11 ^m	68 ^o 5 [']	11	50 ^h 44 ^m	36 ^o 4 [']	10	14 ^h 66 ^m	67 ^o 1 [']	19	26 ^h 18 ^m	54 ^o 3 [']	5
Dec. 7	26 ^h 44 ^m	70 ^o 0 [']	18	51 ^h 60 ^m	36 ^o 0 [']	4	14 ^h 97 ^m	69 ^o 1 [']	20	26 ^h 73 ^m	54 ^o 3 [']	0
17	26 ^h 79 ^m	71 ^o 8 [']	18	52 ^h 82 ^m	36 ^o 3 [']	3	15 ^h 29 ^m	71 ^o 2 [']	21	27 ^h 31 ^m	55 ^o 0 [']	7
27	27 ^h 13 ^m	73 ^o 9 [']	22	54 ^h 03 ^m	37 ^o 3 [']	16	15 ^h 63 ^m	73 ^o 4 [']	21	27 ^h 90 ^m	56 ^o 2 [']	18
37	27 ^h 47 ^m	76 ^o 1 [']	22	55 ^h 21 ^m	38 ^o 9 [']	16	15 ^h 96 ^m	75 ^o 5 [']	33	28 ^h 47 ^m	58 ^o 0 [']	18

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Corvi.			β Corvi.			γ Virginis.			δ Virginis.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. N.	
	^h ^m 12 24	^o ['] 15 53		^h ^m 12 28	^o ['] 22 46		^h ^m 12 36	^o ['] 0 50		^h ^m 12 49	^o ['] 3 59	
Jan. 1	6 ^s 65	40 ^s 3		32 ^s 51	45 ^s 0		1 ^s 17	19 ^s 1		59 ^s 76	66 ^s 1	
11	6 ^s 98 33	42 ^s 5 22		32 ^s 85 34	47 ^s 2 22		1 ^s 49 32	21 ^s 2 21		60 ^s 09 33	64 ^s 0 21	
21	7 ^s 29 31	44 ^s 7 22		33 ^s 17 32	49 ^s 5 23		1 ^s 80 31	23 ^s 1 19		60 ^s 40 31	62 ^s 2 18	
31	7 ^s 57 28	47 ^s 0 23		33 ^s 46 29	51 ^s 9 24		2 ^s 08 28	24 ^s 8 17		60 ^s 69 29	60 ^s 5 17	
Feb. 10	7 ^s 81 24	49 ^s 1 21		33 ^s 71 25	54 ^s 3 24		2 ^s 33 25	26 ^s 4 16		60 ^s 95 26	59 ^s 1 14	
20	8 ^s 02 21	51 ^s 1 20		33 ^s 93 22	56 ^s 5 22		2 ^s 55 22	27 ^s 7 13		61 ^s 18 23	58 ^s 1 10	
Mar. 2	8 ^s 19 17	52 ^s 9 16		34 ^s 11 18	58 ^s 6 21		2 ^s 72 17	28 ^s 7 10		61 ^s 37 19	57 ^s 3 8	
12	8 ^s 32 13	54 ^s 5 14		34 ^s 24 13	60 ^s 6 18		2 ^s 86 14	29 ^s 4 5		61 ^s 52 11	56 ^s 8 2	
Apr. 22	8 ^s 41 9	55 ^s 9 14		34 ^s 33 9	62 ^s 4 18		2 ^s 96 10	29 ^s 9 3		61 ^s 63 8	56 ^s 6 0	
1	8 ^s 46 5	57 ^s 1 12		34 ^s 39 6	63 ^s 9 15		3 ^s 02 6	30 ^s 2 3		61 ^s 71 8	56 ^s 6 0	
11	8 ^s 47 1	58 ^s 0 9		34 ^s 41 1	65 ^s 3 14		3 ^s 05 3	30 ^s 2 0		61 ^s 76 5	57 ^s 0 4	
21	8 ^s 46 1	58 ^s 7 7		34 ^s 40 1	66 ^s 4 11		3 ^s 05 0	30 ^s 0 2		61 ^s 77 1	57 ^s 4 4	
May 1	8 ^s 43 3	59 ^s 1 4		34 ^s 37 3	67 ^s 2 8		3 ^s 03 2	29 ^s 7 3		61 ^s 76 1	58 ^s 0 6	
11	8 ^s 37 6	59 ^s 4 3		34 ^s 31 6	67 ^s 8 6		2 ^s 98 5	29 ^s 2 5		61 ^s 72 4	58 ^s 7 7	
21	8 ^s 30 7	59 ^s 5 1		34 ^s 24 9	68 ^s 2 4		2 ^s 92 6	28 ^s 7 5		61 ^s 67 5	59 ^s 4 7	
31	8 ^s 22 10	59 ^s 4 2		34 ^s 15 10	68 ^s 4 1		2 ^s 85 9	28 ^s 1 6		61 ^s 60 8	60 ^s 2 7	
June 10	8 ^s 12 11	59 ^s 2 4		34 ^s 05 11	68 ^s 3 2		2 ^s 76 9	27 ^s 5 6		61 ^s 52 9	60 ^s 9 7	
20	8 ^s 01 10	58 ^s 8 6		33 ^s 94 12	68 ^s 1 5		2 ^s 67 10	26 ^s 9 6		61 ^s 43 10	61 ^s 6 7	
30	7 ^s 91 11	58 ^s 2 7		33 ^s 82 12	67 ^s 6 7		2 ^s 57 11	26 ^s 3 6		61 ^s 33 11	62 ^s 3 6	
July 10	7 ^s 80 11	57 ^s 5 8		33 ^s 70 12	66 ^s 9 8		2 ^s 46 10	25 ^s 7 6		61 ^s 22 11	62 ^s 9 5	
20	7 ^s 69 11	56 ^s 7 9		33 ^s 58 12	66 ^s 1 10		2 ^s 36 10	25 ^s 1 5		61 ^s 11 10	63 ^s 4 4	
30	7 ^s 58 9	55 ^s 8 9		33 ^s 46 11	65 ^s 1 11		2 ^s 26 9	24 ^s 6 5		61 ^s 01 10	63 ^s 8 3	
Aug. 9	7 ^s 49 8	54 ^s 9 10		33 ^s 35 9	64 ^s 0 12		2 ^s 17 8	24 ^s 1 3		60 ^s 91 9	64 ^s 1 1	
19	7 ^s 41 6	53 ^s 9 9		33 ^s 26 7	62 ^s 8 12		2 ^s 09 7	23 ^s 8 2		60 ^s 82 7	64 ^s 2 0	
Sept. 29	7 ^s 35 4	53 ^s 0 9		33 ^s 19 5	61 ^s 6 12		2 ^s 02 4	23 ^s 6 1		60 ^s 75 5	64 ^s 2 2	
8	7 ^s 31 0	52 ^s 1 7		33 ^s 14 1	60 ^s 4 11		1 ^s 98 1	23 ^s 5 1		60 ^s 70 3	64 ^s 0 4	
18	7 ^s 31 4	51 ^s 4 6		33 ^s 13 3	59 ^s 3 10		1 ^s 97 3	23 ^s 6 4		60 ^s 67 1	63 ^s 6 7	
28	7 ^s 35 8	50 ^s 8 3		33 ^s 16 8	58 ^s 3 8		2 ^s 00 7	24 ^s 0 7		60 ^s 68 5	62 ^s 9 10	
Oct. 8	7 ^s 43 12	50 ^s 5 0		33 ^s 24 12	57 ^s 5 4		2 ^s 07 10	24 ^s 7 8		60 ^s 73 10	61 ^s 9 11	
18	7 ^s 55 17	50 ^s 5 3		33 ^s 36 17	57 ^s 1 1		2 ^s 17 15	25 ^s 5 11		60 ^s 83 13	60 ^s 8 14	
28	7 ^s 72 21	50 ^s 8 6		33 ^s 53 21	57 ^s 0 2		2 ^s 32 20	26 ^s 6 14		60 ^s 96 18	59 ^s 4 16	
Nov. 7	7 ^s 93 25	51 ^s 4 9		33 ^s 74 26	57 ^s 2 6		2 ^s 52 23	28 ^s 0 17		61 ^s 14 23	57 ^s 8 19	
17	8 ^s 18 29	52 ^s 3 13		34 ^s 00 30	57 ^s 8 10		2 ^s 75 27	29 ^s 7 18		61 ^s 37 26	55 ^s 9 20	
27	8 ^s 47 31	53 ^s 6 16		34 ^s 30 32	58 ^s 8 13		3 ^s 02 30	31 ^s 5 20		61 ^s 63 29	53 ^s 9 22	
Dec. 7	8 ^s 78 33	55 ^s 2 19		34 ^s 62 34	60 ^s 1 17		3 ^s 32 32	33 ^s 5 22		61 ^s 92 31	51 ^s 7 22	
17	9 ^s 11 34	57 ^s 1 20		34 ^s 96 35	61 ^s 8 20		3 ^s 64 33	35 ^s 7 21		62 ^s 23 33	49 ^s 5 22	
27	9 ^s 45 34	59 ^s 1 21		35 ^s 31 33	63 ^s 8 21		3 ^s 97 33	37 ^s 8 22		62 ^s 56 33	47 ^s 3 21	
37	9 ^s 79 34	61 ^s 2 21		35 ^s 64 33	65 ^s 9 21		4 ^s 30 33	40 ^s 0 22		62 ^s 89 33	45 ^s 2 21	

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Canum Venat.		ε Virginis.		θ Virginis.		α Virginis. (Spica)									
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.								
	^h 12	^m 50	[°] 38	['] 54	^h 12	^m 56	[°] 11	['] 33	^h 13	^m 4	[°] 4	['] 56	^h 13	^m 19	[°] 10	['] 34
Jan. 1	48 ^h 98 ^m	57 [°] 1 [']	38 ^h 06 ^m	22 [°] 4 [']	11 ^h 10 ^m	39 [°] 3 [']	19 ^h 54 ^m	45 [°] 1 [']								
11	49 ^h 37 ^m 39 ^s	55 [°] 6 ['] 15 ^s	38 ^h 39 ^m 33 ^s	20 [°] 4 ['] 20 ^s	11 ^h 43 ^m 33 ^s	41 [°] 4 ['] 21 ^s	19 ^h 57 ^m 33 ^s	47 [°] 1 ['] 20 ^s								
21	49 ^h 75 ^m 38 ^s	54 [°] 5 ['] 11 ^s	38 ^h 70 ^m 31 ^s	18 [°] 7 ['] 17 ^s	11 ^h 74 ^m 31 ^s	43 [°] 4 ['] 20 ^s	20 ^h 19 ^m 32 ^s	49 [°] 1 ['] 20 ^s								
31	50 ^h 11 ^m 36 ^s	54 [°] 0 ['] 5 ^s	39 ^h 00 ^m 30 ^s	17 [°] 3 ['] 14 ^s	12 ^h 04 ^m 30 ^s	45 [°] 2 ['] 18 ^s	20 ^h 50 ^m 31 ^s	51 [°] 1 ['] 20 ^s								
Feb. 10	50 ^h 43 ^m 32 ^s	54 [°] 0 ['] 0 ^s	39 ^h 28 ^m 28 ^s	16 [°] 2 ['] 11 ^s	12 ^h 31 ^m 27 ^s	46 [°] 9 ['] 17 ^s	20 ^h 78 ^m 28 ^s	53 [°] 0 ['] 19 ^s								
20	50 ^h 71 ^m 28 ^s	54 [°] 6 ['] 6 ^s	39 ^h 51 ^m 23 ^s	15 [°] 4 ['] 8 ^s	12 ^h 54 ^m 23 ^s	48 [°] 4 ['] 15 ^s	21 ^h 03 ^m 25 ^s	54 [°] 7 ['] 17 ^s								
Mar. 2	50 ^h 95 ^m 24 ^s	55 [°] 6 ['] 10 ^s	39 ^h 71 ^m 20 ^s	15 [°] 0 ['] 4 ^s	12 ^h 74 ^m 20 ^s	49 [°] 6 ['] 12 ^s	21 ^h 24 ^m 21 ^s	56 [°] 1 ['] 14 ^s								
12	51 ^h 13 ^m 18 ^s	57 [°] 0 ['] 14 ^s	39 ^h 87 ^m 16 ^s	15 [°] 0 ['] 0 ^s	12 ^h 91 ^m 17 ^s	50 [°] 6 ['] 10 ^s	21 ^h 42 ^m 18 ^s	57 [°] 4 ['] 13 ^s								
Apr. 22	51 ^h 26 ^m 13 ^s	58 [°] 7 ['] 17 ^s	39 ^h 99 ^m 12 ^s	15 [°] 2 ['] 2 ^s	13 ^h 04 ^m 13 ^s	51 [°] 3 ['] 7 ^s	21 ^h 56 ^m 14 ^s	58 [°] 4 ['] 10 ^s								
1	51 ^h 34 ^m 8 ^s	60 [°] 7 ['] 20 ^s	40 ^h 08 ^m 9 ^s	15 [°] 7 ['] 5 ^s	13 ^h 13 ^m 9 ^s	51 [°] 8 ['] 5 ^s	21 ^h 67 ^m 11 ^s	59 [°] 2 ['] 8 ^s								
11	51 ^h 38 ^m 4 ^s	62 [°] 8 ['] 21 ^s	40 ^h 14 ^m 6 ^s	16 [°] 5 ['] 8 ^s	13 ^h 19 ^m 6 ^s	52 [°] 1 ['] 3 ^s	21 ^h 75 ^m 8 ^s	59 [°] 8 ['] 6 ^s								
21	51 ^h 37 ^m 1 ^s	65 [°] 0 ['] 22 ^s	40 ^h 16 ^m 2 ^s	17 [°] 4 ['] 9 ^s	13 ^h 22 ^m 3 ^s	52 [°] 1 ['] 0 ^s	21 ^h 80 ^m 5 ^s	60 [°] 2 ['] 4 ^s								
May 1	51 ^h 33 ^m 4 ^s	67 [°] 2 ['] 22 ^s	40 ^h 14 ^m 2 ^s	18 [°] 4 ['] 10 ^s	13 ^h 22 ^m 0 ^s	52 [°] 0 ['] 1 ^s	21 ^h 82 ^m 2 ^s	60 [°] 4 ['] 2 ^s								
11	51 ^h 25 ^m 8 ^s	69 [°] 2 ['] 20 ^s	40 ^h 10 ^m 4 ^s	19 [°] 4 ['] 10 ^s	13 ^h 20 ^m 2 ^s	51 [°] 7 ['] 3 ^s	21 ^h 81 ^m 1 ^s	60 [°] 4 ['] 0 ^s								
21	51 ^h 15 ^m 10 ^s	71 [°] 0 ['] 18 ^s	40 ^h 05 ^m 5 ^s	20 [°] 5 ['] 11 ^s	13 ^h 17 ^m 6 ^s	51 [°] 4 ['] 3 ^s	21 ^h 78 ^m 3 ^s	60 [°] 3 ['] 1 ^s								
31	51 ^h 02 ^m 13 ^s	72 [°] 6 ['] 13 ^s	39 ^h 98 ^m 7 ^s	21 [°] 5 ['] 10 ^s	13 ^h 11 ^m 6 ^s	50 [°] 9 ['] 5 ^s	21 ^h 73 ^m 5 ^s	60 [°] 1 ['] 2 ^s								
June 10	50 ^h 88 ^m 14 ^s	73 [°] 9 ['] 13 ^s	39 ^h 90 ^m 8 ^s	22 [°] 4 ['] 9 ^s	13 ^h 04 ^m 7 ^s	50 [°] 4 ['] 5 ^s	21 ^h 67 ^m 6 ^s	59 [°] 8 ['] 3 ^s								
20	50 ^h 73 ^m 15 ^s	74 [°] 9 ['] 10 ^s	39 ^h 80 ^m 10 ^s	23 [°] 2 ['] 8 ^s	12 ^h 95 ^m 9 ^s	49 [°] 9 ['] 5 ^s	21 ^h 59 ^m 10 ^s	59 [°] 4 ['] 4 ^s								
30	50 ^h 57 ^m 16 ^s	75 [°] 5 ['] 6 ^s	39 ^h 70 ^m 11 ^s	24 [°] 0 ['] 6 ^s	12 ^h 85 ^m 10 ^s	49 [°] 3 ['] 6 ^s	21 ^h 49 ^m 11 ^s	58 [°] 9 ['] 5 ^s								
July 10	50 ^h 41 ^m 16 ^s	75 [°] 7 ['] 1 ^s	39 ^h 59 ^m 11 ^s	24 [°] 6 ['] 4 ^s	12 ^h 75 ^m 11 ^s	48 [°] 7 ['] 6 ^s	21 ^h 38 ^m 11 ^s	58 [°] 4 ['] 6 ^s								
20	50 ^h 25 ^m 16 ^s	75 [°] 6 ['] 5 ^s	39 ^h 48 ^m 11 ^s	25 [°] 0 ['] 2 ^s	12 ^h 64 ^m 11 ^s	48 [°] 1 ['] 6 ^s	21 ^h 27 ^m 12 ^s	57 [°] 8 ['] 6 ^s								
30	50 ^h 09 ^m 15 ^s	75 [°] 1 ['] 9 ^s	39 ^h 37 ^m 10 ^s	25 [°] 2 ['] 0 ^s	12 ^h 53 ^m 11 ^s	47 [°] 5 ['] 6 ^s	21 ^h 15 ^m 12 ^s	57 [°] 2 ['] 6 ^s								
Aug. 9	49 ^h 94 ^m 13 ^s	74 [°] 2 ['] 13 ^s	39 ^h 27 ^m 10 ^s	25 [°] 2 ['] 1 ^s	12 ^h 42 ^m 10 ^s	47 [°] 0 ['] 5 ^s	21 ^h 04 ^m 11 ^s	56 [°] 6 ['] 6 ^s								
19	49 ^h 81 ^m 10 ^s	72 [°] 9 ['] 16 ^s	39 ^h 17 ^m 8 ^s	25 [°] 1 ['] 4 ^s	12 ^h 32 ^m 8 ^s	46 [°] 5 ['] 3 ^s	20 ^h 93 ^m 10 ^s	56 [°] 0 ['] 6 ^s								
Sept. 29	49 ^h 71 ^m 8 ^s	71 [°] 3 ['] 20 ^s	39 ^h 09 ^m 6 ^s	24 [°] 7 ['] 6 ^s	12 ^h 24 ^m 7 ^s	46 [°] 2 ['] 3 ^s	20 ^h 83 ^m 8 ^s	55 [°] 4 ['] 5 ^s								
8	49 ^h 63 ^m 5 ^s	69 [°] 3 ['] 23 ^s	39 ^h 03 ^m 3 ^s	24 [°] 1 ['] 8 ^s	12 ^h 17 ^m 3 ^s	45 [°] 9 ['] 0 ^s	20 ^h 75 ^m 5 ^s	54 [°] 9 ['] 4 ^s								
18	49 ^h 58 ^m 0 ^s	67 [°] 0 ['] 25 ^s	39 ^h 00 ^m 0 ^s	23 [°] 3 ['] 11 ^s	12 ^h 14 ^m 0 ^s	45 [°] 9 ['] 1 ^s	20 ^h 70 ^m 2 ^s	54 [°] 5 ['] 2 ^s								
28	49 ^h 58 ^m 4 ^s	64 [°] 5 ['] 31 ^s	39 ^h 00 ^m 5 ^s	22 [°] 2 ['] 14 ^s	12 ^h 14 ^m 3 ^s	46 [°] 0 ['] 3 ^s	20 ^h 68 ^m 2 ^s	54 [°] 3 ['] 0 ^s								
Oct. 8	49 ^h 62 ^m 10 ^s	61 [°] 4 ['] 29 ^s	39 ^h 05 ^m 8 ^s	20 [°] 8 ['] 16 ^s	12 ^h 17 ^m 8 ^s	46 [°] 3 ['] 6 ^s	20 ^h 70 ^m 7 ^s	54 [°] 3 ['] 3 ^s								
18	49 ^h 72 ^m 14 ^s	58 [°] 5 ['] 31 ^s	39 ^h 13 ^m 13 ^s	19 [°] 2 ['] 19 ^s	12 ^h 25 ^m 13 ^s	46 [°] 9 ['] 9 ^s	20 ^h 77 ^m 11 ^s	54 [°] 6 ['] 5 ^s								
28	49 ^h 86 ^m 20 ^s	55 [°] 4 ['] 32 ^s	39 ^h 26 ^m 17 ^s	17 [°] 3 ['] 20 ^s	12 ^h 38 ^m 17 ^s	47 [°] 8 ['] 11 ^s	20 ^h 88 ^m 16 ^s	55 [°] 1 ['] 8 ^s								
Nov. 7	50 ^h 06 ^m 25 ^s	52 [°] 2 ['] 31 ^s	39 ^h 43 ^m 22 ^s	15 [°] 3 ['] 22 ^s	12 ^h 55 ^m 21 ^s	48 [°] 9 ['] 14 ^s	21 ^h 04 ^m 20 ^s	55 [°] 9 ['] 10 ^s								
17	50 ^h 31 ^m 29 ^s	49 [°] 1 ['] 30 ^s	39 ^h 65 ^m 26 ^s	13 [°] 1 ['] 23 ^s	12 ^h 76 ^m 25 ^s	50 [°] 3 ['] 17 ^s	21 ^h 24 ^m 25 ^s	56 [°] 9 ['] 14 ^s								
27	50 ^h 60 ^m 33 ^s	46 [°] 1 ['] 29 ^s	39 ^h 91 ^m 29 ^s	10 [°] 8 ['] 23 ^s	13 ^h 01 ^m 29 ^s	52 [°] 0 ['] 18 ^s	21 ^h 49 ^m 28 ^s	58 [°] 3 ['] 16 ^s								
Dec. 7	50 ^h 93 ^m 37 ^s	43 [°] 2 ['] 26 ^s	40 ^h 20 ^m 31 ^s	8 [°] 5 ['] 24 ^s	13 ^h 30 ^m 31 ^s	53 [°] 8 ['] 20 ^s	21 ^h 77 ^m 31 ^s	59 [°] 9 ['] 18 ^s								
17	51 ^h 30 ^m 39 ^s	40 [°] 6 ['] 22 ^s	40 ^h 51 ^m 33 ^s	6 [°] 1 ['] 23 ^s	13 ^h 61 ^m 33 ^s	55 [°] 8 ['] 21 ^s	22 ^h 08 ^m 33 ^s	61 [°] 7 ['] 19 ^s								
27	51 ^h 69 ^m 39 ^s	38 [°] 4 ['] 18 ^s	40 ^h 84 ^m 34 ^s	3 [°] 8 ['] 21 ^s	13 ^h 94 ^m 33 ^s	57 [°] 9 ['] 21 ^s	22 ^h 41 ^m 34 ^s	63 [°] 6 ['] 20 ^s								
37	52 ^h 08 ^m 39 ^s	36 [°] 6 ['] 18 ^s	41 ^h 18 ^m 34 ^s	1 [°] 7 ['] 21 ^s	14 ^h 27 ^m 33 ^s	60 [°] 0 ['] 21 ^s	22 ^h 75 ^m 34 ^s	65 [°] 6 ['] 20 ^s								

344 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	ζ Virginis.			τ Bootis.			η Ursæ Majoris.			γ Bootis.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s /	^h ^m ^s /		^h ^m ^s /	^h ^m ^s /		^h ^m ^s /	^h ^m ^s /		^h ^m ^s /	^h ^m ^s /	
	13 29 0 1	13 41 18 0		13 41 18 0	18 0 0 0		13 43 49 51	13 49 18 56		13 49 18 56	18 56 0 0	
Jan. 1	1 ^s 03 32	35 ^s 5 21		57 ^s 93 33	36 ^s 7 21		8 ^s 45 43	53 ^s 6 19		22 ^s 63 33	74 ^s 4 22	
11	1 ^s 35 32	37 ^s 6 19		58 ^s 26 33	34 ^s 6 21		8 ^s 88 43	51 ^s 7 19		22 ^s 96 33	72 ^s 2 22	
21	1 ^s 67 32	39 ^s 5 18		58 ^s 59 32	32 ^s 8 18		9 ^s 32 44	50 ^s 4 13		23 ^s 29 33	70 ^s 4 18	
31	1 ^s 98 31	41 ^s 3 15		58 ^s 91 30	31 ^s 3 15		9 ^s 75 43	49 ^s 7 7		23 ^s 62 33	68 ^s 9 15	
Feb. 10	2 ^s 26 28	42 ^s 8 15		59 ^s 21 30	30 ^s 3 10		10 ^s 15 40	49 ^s 5 2		23 ^s 92 30	67 ^s 8 11	
20	2 ^s 51 25	44 ^s 1 13		59 ^s 48 27	29 ^s 7 6		10 ^s 52 37	50 ^s 0 5		24 ^s 20 28	67 ^s 2 6	
Mar. 2	2 ^s 73 22	45 ^s 1 10		59 ^s 72 24	29 ^s 5 2		10 ^s 85 33	51 ^s 1 11		24 ^s 44 24	67 ^s 0 2	
12	2 ^s 92 19	45 ^s 8 7		59 ^s 92 20	29 ^s 6 1		11 ^s 13 28	52 ^s 7 16		24 ^s 65 21	67 ^s 2 21	
22	3 ^s 07 15	46 ^s 2 4		60 ^s 09 17	30 ^s 2 6		11 ^s 35 22	54 ^s 6 19		24 ^s 83 18	67 ^s 8 6	
Apr. 1	3 ^s 19 12	46 ^s 4 2		60 ^s 22 13	31 ^s 1 9		11 ^s 51 16	56 ^s 9 23		24 ^s 97 14	68 ^s 7 9	
11	3 ^s 27 8	46 ^s 3 1		60 ^s 32 10	32 ^s 2 11		11 ^s 61 10	59 ^s 5 26		25 ^s 07 10	69 ^s 8 11	
21	3 ^s 32 5	46 ^s 0 3		60 ^s 38 6	33 ^s 5 13		11 ^s 66 5	62 ^s 2 27		25 ^s 14 7	71 ^s 2 14	
May 1	3 ^s 35 3	45 ^s 6 4		60 ^s 41 3	34 ^s 9 14		11 ^s 66 0	64 ^s 9 27		25 ^s 17 3	72 ^s 6 14	
11	3 ^s 35 0	45 ^s 1 5		60 ^s 41 0	36 ^s 3 14		11 ^s 61 5	67 ^s 4 25		25 ^s 18 1	74 ^s 2 15	
21	3 ^s 33 2	44 ^s 5 6		60 ^s 39 2	37 ^s 8 15		11 ^s 51 13	69 ^s 8 24		25 ^s 17 4	75 ^s 7 14	
31	3 ^s 29 4	43 ^s 8 7		60 ^s 34 5	39 ^s 2 14		11 ^s 38 14	72 ^s 0 22		25 ^s 13 4	77 ^s 1 13	
June 10	3 ^s 22 7	43 ^s 1 7		60 ^s 27 7	40 ^s 5 13		11 ^s 22 16	73 ^s 8 18		25 ^s 06 7	78 ^s 4 13	
20	3 ^s 14 8	42 ^s 5 6		60 ^s 18 9	41 ^s 6 11		11 ^s 03 19	75 ^s 3 15		24 ^s 97 9	79 ^s 6 12	
30	3 ^s 05 9	41 ^s 8 7		60 ^s 08 10	42 ^s 5 9		10 ^s 82 21	76 ^s 3 10		24 ^s 87 10	80 ^s 6 10	
July 10	2 ^s 95 10	41 ^s 2 6		59 ^s 96 12	43 ^s 3 8		10 ^s 60 22	76 ^s 9 6		24 ^s 76 11	81 ^s 3 7	
20	2 ^s 84 11	40 ^s 6 6		59 ^s 84 12	43 ^s 8 5		10 ^s 36 24	77 ^s 0 1		24 ^s 63 13	81 ^s 8 5	
30	2 ^s 72 12	40 ^s 1 5		59 ^s 71 13	44 ^s 0 2		10 ^s 12 24	76 ^s 7 3		24 ^s 50 13	82 ^s 1 3	
Aug. 9	2 ^s 61 11	39 ^s 8 3		59 ^s 58 13	44 ^s 0 0		9 ^s 89 23	75 ^s 9 8		24 ^s 37 13	82 ^s 1 0	
19	2 ^s 50 11	39 ^s 5 3		59 ^s 45 13	43 ^s 7 3		9 ^s 67 22	74 ^s 7 12		24 ^s 24 13	81 ^s 8 3	
29	2 ^s 40 10	39 ^s 3 2		59 ^s 33 12	43 ^s 2 5		9 ^s 46 21	73 ^s 0 17		24 ^s 11 13	81 ^s 3 5	
Sept. 8	2 ^s 31 9	39 ^s 3 0		59 ^s 23 10	42 ^s 4 8		9 ^s 28 18	70 ^s 9 21		24 ^s 00 11	80 ^s 4 9	
18	2 ^s 25 6	39 ^s 5 2		59 ^s 15 8	41 ^s 3 11		9 ^s 13 15	68 ^s 5 24		23 ^s 92 8	79 ^s 3 11	
28	2 ^s 22 3	39 ^s 9 4		59 ^s 10 5	39 ^s 9 14		9 ^s 03 10	65 ^s 7 28		23 ^s 86 6	77 ^s 9 14	
Oct. 8	2 ^s 23 1	40 ^s 5 6		59 ^s 09 1	38 ^s 3 16		8 ^s 98 5	62 ^s 6 31		23 ^s 84 8	76 ^s 2 17	
18	2 ^s 29 16	41 ^s 5 10		59 ^s 12 3	36 ^s 4 19		8 ^s 99 1	59 ^s 3 33		23 ^s 87 3	74 ^s 3 19	
28	2 ^s 39 10	42 ^s 6 11		59 ^s 21 9	34 ^s 1 23		9 ^s 06 7	55 ^s 4 39		23 ^s 94 7	71 ^s 9 24	
Nov. 7	2 ^s 53 14	44 ^s 0 14		59 ^s 33 12	31 ^s 7 24		9 ^s 19 13	51 ^s 8 36		24 ^s 06 12	69 ^s 5 24	
17	2 ^s 72 19	45 ^s 6 16		59 ^s 51 18	29 ^s 2 25		9 ^s 39 20	48 ^s 2 36		24 ^s 23 17	66 ^s 9 26	
27	2 ^s 95 23	47 ^s 4 18		59 ^s 73 22	26 ^s 6 26		9 ^s 65 26	44 ^s 7 35		24 ^s 45 22	64 ^s 2 27	
Dec. 7	3 ^s 22 27	49 ^s 4 20		59 ^s 99 26	24 ^s 0 26		9 ^s 97 32	41 ^s 4 33		24 ^s 70 25	61 ^s 5 27	
17	3 ^s 52 30	51 ^s 5 31		60 ^s 29 30	21 ^s 4 26		10 ^s 34 37	38 ^s 4 30		24 ^s 99 29	58 ^s 9 26	
27	3 ^s 84 32	53 ^s 6 31		60 ^s 61 32	18 ^s 9 25		10 ^s 75 41	35 ^s 8 26		25 ^s 31 32	56 ^s 4 25	
37	4 ^s 17 33	55 ^s 8 33		60 ^s 94 33	16 ^s 7 22		11 ^s 18 43	33 ^s 6 22		25 ^s 65 34	54 ^s 2 22	

APPARENT PLACES OF STARS, 1889. 341

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Centauri.			τ Virginis.			α Draconis.			α Bootis. (Arcturus)		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 13	^m 55	^o 59	^h 13	^m 55	^o 2	^h 14	^m 1	^o 64	^h 14	^m 10	^o 19
Jan. 1	57° 90	55	50° 5	58° 49	32	58° 9	20° 96	60	72° 3	34° 41	33	38° 2
11	58° 45	55	51° 4	58° 81	32	56° 9	21° 56	60	70° 4	34° 74	33	36° 0
21	59° 01	56	52° 7	59° 13	32	54° 9	22° 17	61	69° 2	35° 07	33	34° 0
31	59° 55	54	54° 5	59° 44	31	53° 2	22° 78	61	68° 6	35° 39	32	32° 4
Feb. 10	60° 05	50	56° 6	59° 74	30	51° 7	23° 37	59	68° 6	35° 70	31	31° 2
20	60° 52	47	59° 1	60° 01	27	50° 5	23° 92	55	69° 4	35° 99	29	30° 4
Mar. 2	60° 94	42	61° 8	60° 25	24	49° 6	24° 41	49	70° 7	36° 25	26	30° 2
12	61° 30	36	64° 7	60° 46	21	48° 9	24° 82	41	72° 6	36° 47	22	30° 3
Apr. 22	61° 60	30	67° 7	60° 63	17	48° 6	25° 16	34	74° 9	36° 66	19	30° 8
1	61° 85	25	70° 8	60° 77	14	48° 6	25° 41	25	77° 6	36° 82	16	31° 7
11	62° 03	18	73° 8	60° 89	12	48° 8	25° 58	17	80° 5	36° 94	12	32° 8
21	62° 16	13	76° 8	60° 97	8	49° 2	25° 65	7	83° 5	37° 03	9	34° 2
May 1	62° 23	7	79° 6	61° 02	5	49° 8	25° 64	1	86° 5	37° 09	6	35° 7
11	62° 23	0	82° 3	61° 04	2	50° 5	25° 55	9	89° 4	37° 11	2	37° 3
21	62° 18	5	84° 8	61° 04	0	51° 2	25° 38	27	92° 1	37° 11	27	38° 8
31	62° 08	10	86° 9	61° 02	2	52° 0	25° 15	23	94° 5	37° 08	24	40° 4
June 10	61° 93	15	88° 8	60° 97	5	52° 8	24° 86	29	96° 5	37° 02	20	41° 8
20	61° 73	20	90° 3	60° 91	6	53° 6	24° 53	33	98° 1	36° 95	16	43° 0
30	61° 49	24	91° 4	60° 83	8	54° 3	24° 16	37	99° 2	36° 85	11	44° 1
July 10	61° 21	28	92° 0	60° 73	10	55° 0	23° 76	40	99° 8	36° 73	6	44° 9
20	60° 90	31	92° 2	60° 62	11	55° 5	23° 34	42	99° 9	36° 61	12	45° 5
30	60° 58	32	92° 0	60° 50	12	56° 0	22° 92	42	99° 5	36° 47	14	45° 8
Aug. 9	60° 26	32	91° 4	60° 37	13	56° 4	22° 50	40	98° 6	36° 32	15	45° 8
19	59° 94	32	90° 3	60° 25	12	56° 6	22° 10	38	97° 1	36° 18	14	45° 6
Sept. 29	59° 64	30	88° 8	60° 13	12	56° 6	21° 72	38	95° 2	36° 04	14	45° 0
8	59° 38	26	87° 0	60° 03	10	56° 6	21° 38	34	92° 9	35° 91	13	44° 2
18	59° 17	21	84° 9	59° 95	8	56° 3	21° 09	29	90° 1	35° 81	10	43° 0
28	59° 02	15	82° 6	59° 90	5	55° 8	20° 86	23	87° 0	35° 73	8	41° 6
Oct. 8	58° 95	7	80° 2	59° 88	2	55° 1	20° 70	16	83° 6	35° 68	5	39° 9
18	58° 96	1	77° 8	59° 90	2	54° 1	20° 62	8	80° 0	35° 68	0	37° 9
28	59° 07	11	75° 3	59° 97	7	52° 7	20° 62	0	75° 8	35° 73	5	35° 5
Nov. 7	59° 27	20	73° 3	60° 09	12	51° 3	20° 73	11	71° 9	35° 82	9	33° 0
17	59° 55	28	71° 5	60° 26	17	49° 6	20° 94	21	68° 1	35° 97	15	30° 4
27	59° 92	37	70° 2	60° 47	21	47° 7	21° 24	30	64° 4	35° 16	19	27° 6
Dec. 7	60° 36	44	69° 3	60° 72	25	45° 7	21° 63	39	60° 9	36° 40	24	24° 8
17	60° 85	49	68° 9	61° 00	28	43° 5	22° 09	46	57° 7	36° 67	27	22° 1
27	61° 38	53	69° 0	61° 31	31	41° 3	22° 62	53	55° 0	36° 98	31	19° 4
37	61° 94	56	69° 6	61° 63	32	39° 2	23° 20	58	52° 8	37° 30	32	17° 0

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	<i>f</i> Bootis.			<i>p</i> Bootis.			<i>α</i> Centauri.			<i>α</i> Bootis.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	^h 14	^m 21	^o 19	^h 14	^m 27	^o 30	^h 14	^m 32	^o 60	^h 14	^m 40	^o 27
Jan. 1	16 ^s .19	34 ^s .1	23	1 ^s .17	28 ^s .4	23	2 ^s .09	6 ^s .2	4	6 ^s .69	30 ^s .2	24
11	16 ^s .52	33 ^s .8	19	1 ^s .50	26 ^s .1	20	2 ^s .64	6 ^s .6	8	7 ^s .02	27 ^s .8	21
21	16 ^s .85	33 ^s .9	16	1 ^s .85	24 ^s .1	15	3 ^s .20	7 ^s .4	13	7 ^s .36	25 ^s .7	16
31	17 ^s .18	33 ^s .3	12	2 ^s .20	22 ^s .6	10	3 ^s .75	8 ^s .7	16	7 ^s .70	24 ^s .1	12
Feb. 10	17 ^s .49	27 ^s .1	7	2 ^s .53	21 ^s .6	4	4 ^s .29	10 ^s .3	20	8 ^s .03	22 ^s .9	6
20	17 ^s .78	26 ^s .4	3	2 ^s .85	21 ^s .2	1	4 ^s .79	12 ^s .3	23	8 ^s .34	22 ^s .3	1
Mar. 2	18 ^s .05	26 ^s .1	2	3 ^s .14	21 ^s .3	6	5 ^s .25	14 ^s .6	26	8 ^s .63	22 ^s .2	4
12	18 ^s .29	26 ^s .3	5	3 ^s .40	21 ^s .9	10	5 ^s .67	17 ^s .2	27	8 ^s .89	22 ^s .6	8
Apr. 22	18 ^s .49	26 ^s .8	9	3 ^s .62	22 ^s .9	14	6 ^s .03	19 ^s .9	28	9 ^s .11	23 ^s .4	12
1	18 ^s .66	27 ^s .7	12	3 ^s .80	24 ^s .3	17	6 ^s .34	22 ^s .7	28	9 ^s .31	24 ^s .6	16
11	18 ^s .79	28 ^s .9	14	3 ^s .94	26 ^s .0	20	6 ^s .59	25 ^s .5	29	9 ^s .46	26 ^s .2	18
21	18 ^s .89	30 ^s .3	16	4 ^s .05	28 ^s .0	21	6 ^s .78	28 ^s .4	28	9 ^s .58	28 ^s .0	20
May 1	18 ^s .96	31 ^s .9	16	4 ^s .12	30 ^s .1	22	6 ^s .92	31 ^s .2	27	9 ^s .67	30 ^s .0	20
11	19 ^s .00	33 ^s .5	17	4 ^s .15	32 ^s .3	21	6 ^s .99	33 ^s .9	25	9 ^s .71	32 ^s .0	20
21	19 ^s .01	35 ^s .2	16	4 ^s .15	34 ^s .4	20	7 ^s .00	36 ^s .4	23	9 ^s .73	34 ^s .0	20
31	18 ^s .99	36 ^s .8	15	4 ^s .12	36 ^s .4	19	6 ^s .94	38 ^s .7	21	9 ^s .72	36 ^s .0	19
June 10	18 ^s .94	38 ^s .3	14	4 ^s .06	38 ^s .3	16	6 ^s .83	40 ^s .8	18	9 ^s .68	37 ^s .9	16
20	18 ^s .87	39 ^s .7	11	3 ^s .97	39 ^s .9	14	6 ^s .67	42 ^s .6	13	9 ^s .60	39 ^s .5	14
30	18 ^s .78	40 ^s .8	10	3 ^s .86	41 ^s .3	10	6 ^s .46	43 ^s .9	10	9 ^s .51	40 ^s .9	12
July 10	18 ^s .68	41 ^s .8	7	3 ^s .73	42 ^s .3	8	6 ^s .20	44 ^s .9	6	9 ^s .39	42 ^s .1	8
20	18 ^s .55	42 ^s .5	4	3 ^s .58	43 ^s .1	4	5 ^s .89	45 ^s .5	2	9 ^s .25	42 ^s .9	5
30	18 ^s .41	42 ^s .9	2	3 ^s .42	43 ^s .5	0	5 ^s .56	45 ^s .7	3	9 ^s .09	43 ^s .4	2
Aug. 9	18 ^s .27	43 ^s .1	2	3 ^s .24	43 ^s .5	4	5 ^s .21	45 ^s .4	7	8 ^s .93	43 ^s .6	2
19	18 ^s .12	42 ^s .9	4	3 ^s .07	43 ^s .1	7	4 ^s .86	44 ^s .7	11	8 ^s .76	43 ^s .4	6
Sept. 29	17 ^s .08	42 ^s .5	7	2 ^s .91	42 ^s .4	11	4 ^s .52	43 ^s .6	15	8 ^s .59	42 ^s .8	9
8	17 ^s .85	41 ^s .8	11	2 ^s .75	41 ^s .3	15	4 ^s .20	42 ^s .1	18	8 ^s .43	41 ^s .9	12
18	17 ^s .73	40 ^s .7	13	2 ^s .61	39 ^s .8	18	3 ^s .93	40 ^s .3	21	8 ^s .29	40 ^s .7	16
28	17 ^s .64	39 ^s .4	16	2 ^s .50	38 ^s .0	21	3 ^s .71	38 ^s .2	23	8 ^s .18	39 ^s .1	20
Oct. 8	17 ^s .59	37 ^s .8	19	2 ^s .43	35 ^s .9	24	3 ^s .56	35 ^s .9	23	8 ^s .10	37 ^s .1	22
18	17 ^s .58	35 ^s .9	22	2 ^s .40	33 ^s .5	27	3 ^s .49	33 ^s .6	24	8 ^s .06	34 ^s .9	25
28	17 ^s .61	33 ^s .7	26	2 ^s .42	30 ^s .8	32	3 ^s .50	31 ^s .2	24	8 ^s .06	32 ^s .4	30
Nov. 7	17 ^s .70	31 ^s .1	26	2 ^s .50	27 ^s .6	31	3 ^s .63	28 ^s .8	24	8 ^s .12	29 ^s .4	29
17	17 ^s .84	28 ^s .5	27	2 ^s .62	24 ^s .5	31	3 ^s .85	26 ^s .8	17	8 ^s .23	26 ^s .5	30
27	18 ^s .02	25 ^s .8	27	2 ^s .80	21 ^s .4	31	4 ^s .16	25 ^s .1	13	8 ^s .40	23 ^s .5	31
Dec. 7	18 ^s .25	23 ^s .1	28	3 ^s .03	18 ^s .3	30	4 ^s .54	23 ^s .8	8	8 ^s .62	20 ^s .4	30
17	18 ^s .52	20 ^s .3	26	3 ^s .30	15 ^s .3	29	4 ^s .99	23 ^s .0	4	8 ^s .88	17 ^s .4	28
27	18 ^s .82	17 ^s .7	24	3 ^s .61	12 ^s .4	26	5 ^s .50	22 ^s .6	1	9 ^s .17	14 ^s .6	26
37	19 ^s .14	15 ^s .3	24	3 ^s .94	9 ^s .8	26	6 ^s .04	22 ^s .7	1	9 ^s .49	12 ^s .0	26

APPARENT PLACES OF STARS, 1889. 347

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Libræ.		β Ursæ Minoris.		ψ Bootis.		β Libræ.	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	^h ^m ^s /	^h ^m ^s /	^h ^m ^s /	^h ^m ^s /	^h ^m ^s /	^h ^m ^s /	^h ^m ^s /	^h ^m ^s /
	14 44 15 34	14 50 74 36	14 59 27 22	15 11 8 58				
Jan. 1	42° 62' 32"	37° 4' 16"	58° 72' 80"	22° 3' 23"	39° 62' 32"	48° 8' 26"	0° 20' 30"	13° 9' 17"
11	42° 94' 33"	39° 0' 17"	59° 52' 87"	20° 0' 17"	39° 94' 33"	46° 2' 22"	0° 50' 32"	15° 6' 17"
21	43° 27' 33"	40° 7' 17"	60° 39' 90"	18° 3' 11"	40° 27' 34"	44° 0' 17"	0° 82' 32"	17° 3' 17"
31	43° 60' 33"	42° 4' 17"	61° 29' 91"	17° 2' 4"	40° 61' 33"	42° 3' 12"	1° 14' 32"	19° 0' 15"
Feb. 10	43° 92' 30"	44° 1' 15"	62° 20' 88"	16° 8' 3"	40° 94' 31"	41° 1' 8"	1° 46' 30"	20° 5' 14"
20	44° 22' 28"	45° 6' 14"	63° 08' 83"	17° 1' 10"	41° 25' 30"	40° 3' 2"	1° 76' 28"	21° 9' 11"
Mar. 2	44° 50' 25"	47° 0' 13"	63° 91' 74"	18° 1' 15"	41° 55' 27"	40° 1' 3"	2° 04' 26"	23° 0' 10"
12	44° 75' 22"	48° 3' 11"	64° 65' 64"	19° 6' 21"	41° 82' 24"	40° 4' 7"	2° 30' 24"	24° 0' 7"
22	44° 97' 20"	49° 4' 9"	65° 29' 52"	21° 7' 25"	42° 06' 21"	41° 1' 11"	2° 54' 21"	24° 7' 5"
Apr. 1	45° 17' 16"	50° 3' 7"	65° 81' 38"	24° 2' 28"	42° 27' 18"	42° 2' 15"	2° 75' 19"	25° 2' 3"
11	45° 33' 14"	51° 0' 5"	66° 19' 24"	27° 0' 30"	42° 45' 14"	43° 7' 18"	2° 94' 16"	25° 5' 1"
21	45° 47' 11"	51° 5' 4"	66° 43' 10"	30° 0' 32"	42° 59' 10"	45° 5' 20"	3° 10' 12"	25° 6' 1"
May 1	45° 58' 8"	51° 9' 3"	66° 53' 4"	33° 2' 31"	42° 69' 7"	47° 5' 21"	3° 22' 10"	25° 5' 2"
11	45° 66' 5"	52° 2' 2"	66° 49' 18"	36° 3' 29"	42° 76' 4"	49° 6' 21"	3° 32' 8"	25° 3' 2"
21	45° 71' 2"	52° 4' 0"	66° 31' 31"	39° 2' 28"	42° 80' 0"	51° 7' 21"	3° 40' 4"	25° 1' 4"
31	45° 73' 1"	52° 4' 1"	66° 00' 42"	42° 0' 24"	42° 80' 3"	53° 8' 19"	3° 44' 2"	24° 7' 4"
June 10	45° 72' 3"	52° 3' 1"	65° 58' 52"	44° 4' 21"	42° 77' 6"	55° 7' 18"	3° 46' 2"	24° 3' 4"
20	45° 69' 6"	52° 2' 2"	65° 06' 61"	46° 5' 16"	42° 71' 8"	57° 5' 15"	3° 44' 4"	23° 9' 5"
30	45° 63' 9"	52° 0' 3"	64° 45' 67"	48° 1' 11"	42° 63' 11"	59° 0' 13"	3° 40' 7"	23° 4' 4"
July 10	45° 54' 10"	51° 7' 3"	63° 78' 73"	49° 2' 6"	42° 52' 14"	60° 3' 10"	3° 33' 9"	23° 0' 5"
20	45° 44' 12"	51° 4' 4"	63° 05' 76"	49° 8' 1"	42° 38' 15"	61° 3' 6"	3° 24' 12"	22° 5' 4"
30	45° 32' 14"	51° 0' 4"	62° 29' 78"	49° 9' 4"	42° 23' 17"	61° 9' 3"	3° 12' 13"	22° 1' 4"
Aug. 9	45° 18' 15"	50° 6' 4"	61° 51' 77"	49° 5' 10"	42° 06' 17"	62° 2' 0"	2° 99' 15"	21° 7' 3"
19	45° 03' 14"	50° 1' 4"	60° 74' 76"	48° 5' 15"	41° 89' 18"	62° 2' 4"	2° 84' 15"	21° 4' 3"
29	44° 89' 12"	49° 7' 5"	59° 98' 72"	47° 0' 19"	41° 71' 17"	61° 8' 8"	2° 69' 14"	21° 1' 3"
Sept. 8	44° 75' 14"	49° 2' 5"	59° 26' 65"	45° 1' 24"	41° 54' 16"	61° 0' 11"	2° 55' 13"	20° 8' 1"
18	44° 63' 10"	48° 8' 4"	58° 61' 58"	42° 7' 28"	41° 38' 13"	59° 9' 15"	2° 42' 12"	20° 7' 1"
28	44° 53' 6"	48° 4' 3"	58° 03' 48"	39° 9' 32"	41° 25' 10"	58° 4' 18"	2° 30' 8"	20° 6' 1"
Oct. 8	44° 47' 2"	48° 1' 1"	57° 55' 37"	36° 7' 35"	41° 15' 6"	56° 6' 22"	2° 22' 5"	20° 7' 3"
18	44° 45' 2"	48° 0' 1"	57° 18' 24"	33° 2' 38"	41° 09' 24"	54° 4' 24"	2° 17' 0"	21° 0' 5"
28	44° 47' 8"	48° 1' 3"	56° 94' 10"	29° 4' 42"	41° 07' 3"	52° 0' 27"	2° 17' 4"	21° 5' 6"
Nov. 7	44° 55' 13"	48° 4' 6"	56° 84' 7"	25° 2' 39"	41° 10' 10"	49° 3' 32"	2° 21' 11"	22° 1' 9"
17	44° 68' 18"	49° 0' 8"	56° 91' 22"	21° 3' 39"	41° 20' 14"	46° 1' 30"	2° 32' 15"	23° 0' 11"
27	44° 86' 23"	49° 8' 10"	57° 13' 37"	17° 4' 37"	41° 34' 19"	43° 1' 30"	2° 47' 19"	24° 1' 13"
Dec. 7	45° 09' 26"	50° 8' 12"	57° 50' 51"	13° 7' 34"	41° 53' 24"	40° 1' 30"	2° 66' 24"	25° 4' 15"
17	45° 35' 30"	52° 0' 15"	58° 01' 64"	10° 3' 31"	41° 77' 28"	37° 1' 30"	2° 90' 27"	26° 9' 16"
27	45° 65' 32"	53° 5' 16"	58° 65' 75"	7° 2' 26"	42° 05' 31"	34° 1' 27"	3° 17' 30"	28° 5' 18"
37	45° 97' 32"	55° 1' 16"	59° 40' 75"	4° 6' 26"	42° 36' 31"	31° 4' 27"	3° 47' 30"	30° 3' 18"

348 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Coronæ.			α Serpentis.			ϵ Serpentis.			ζ Ursæ Minoris.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 15	^m 29	^o 27	^h 15	^m 38	^o 6	^h 15	^m 45	^o 4	^h 15	^m 47	^o 78
Jan. 1	57.41	17.7	46.15	34.2	15.09	48.4	57.62	59.0				
11	57.71	15.1	46.43	32.1	15.37	46.3	58.43	56.1				
21	58.03	12.8	46.73	30.1	15.67	44.4	59.37	53.8				
31	58.36	10.8	47.04	28.3	15.98	42.6	60.42	52.1				
Feb. 10	58.69	9.3	47.35	26.8	16.28	41.1	61.53	51.0				
20	59.01	8.4	47.65	25.6	16.58	39.9	62.67	50.5				
Mar. 2	59.32	8.0	47.94	24.7	16.87	39.0	63.78	50.7				
12	59.61	8.1	48.21	24.3	17.15	38.5	64.83	51.6				
22	59.87	8.7	48.46	24.2	17.40	38.3	65.79	53.1				
Apr. 1	60.11	9.7	48.69	24.4	17.63	38.5	66.63	55.1				
11	60.31	11.2	48.89	24.9	17.84	38.9	67.32	57.6				
21	60.48	12.9	49.07	25.7	18.02	39.6	67.84	60.4				
May 1	60.61	14.9	49.22	26.7	18.18	40.5	68.19	63.4				
11	60.71	17.0	49.34	27.9	18.31	41.6	68.35	66.5				
21	60.78	19.2	49.43	29.1	18.40	42.7	68.33	69.6				
31	60.81	21.4	49.49	30.4	18.47	43.9	68.12	72.7				
June 10	60.81	23.5	49.52	31.6	18.51	45.1	67.74	75.5				
20	60.78	25.4	49.51	32.8	18.51	46.2	67.21	78.1				
30	60.71	27.1	49.48	34.0	18.48	47.3	66.53	80.3				
July 10	60.61	28.5	49.42	35.0	18.43	48.3	65.73	82.1				
20	60.49	29.7	49.34	35.8	18.35	49.1	64.83	83.4				
30	60.34	30.6	49.23	36.5	18.24	49.8	63.83	84.3				
Aug. 9	60.18	31.1	49.09	37.1	18.11	50.3	62.78	84.6				
19	60.00	31.3	48.94	37.4	17.96	50.6	61.70	84.5				
29	59.81	31.1	48.78	37.5	17.81	50.8	60.60	83.8				
Sept. 8	59.63	30.6	48.63	37.4	17.65	50.7	59.52	82.6				
18	59.45	29.7	48.48	37.1	17.50	50.5	58.48	80.9				
28	59.30	28.4	48.34	36.6	17.36	50.1	57.51	78.7				
Oct. 8	59.17	26.7	48.23	35.8	17.25	49.4	56.64	76.1				
18	59.07	24.7	48.16	34.8	17.17	48.5	55.88	73.1				
28	59.02	22.4	48.12	33.5	17.13	47.3	55.27	69.8				
Nov. 7	59.02	19.9	48.13	32.0	17.13	45.9	54.83	66.3				
17	59.08	16.8	48.19	30.2	17.18	44.3	54.57	62.5				
27	59.19	13.8	48.31	28.1	17.29	42.3	54.51	58.3				
Dec. 7	59.35	10.8	48.47	26.0	17.45	40.3	54.67	54.5				
17	59.56	7.7	48.68	23.8	17.65	38.2	55.03	50.8				
27	59.81	4.7	48.92	21.6	17.89	36.1	55.58	47.4				
37	60.10	1.9	49.19	19.4	18.16	34.0	56.32	44.3				

APPARENT PLACES OF STARS, 1889. 349

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♏ Scorpii.			♐ Ophiuchi.			♑ Herculis.			♒ Draconis.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 15	^m 58	^o 19	^h 16	^m 8	^o 3	^h 16	^m 16	^o 19	^h 16	^m 22	^o 61
Jan. 1	56.86	53.6	29.64	22.6	17	59.38	52.2	26.62	49.8	33		
11	57.15	54.7	29.91	24.3	17	59.64	49.6	26.99	46.5	28		
21	57.46	55.8	30.20	26.0	16	59.92	47.3	27.41	43.7	23		
31	57.79	57.1	30.50	27.6	16	60.22	45.3	27.88	41.4	17		
Feb. 10	58.12	58.3	30.80	29.0	14	60.53	43.7	28.39	39.7	11		
20	58.44	59.4	31.11	30.2	9	60.84	42.4	28.91	38.6	4		
Mar. 2	58.75	60.5	31.41	31.1	7	61.14	41.6	29.43	38.2	3		
12	59.05	61.5	31.69	31.8	4	61.43	41.3	29.94	38.5	9		
Apr. 22	59.33	62.4	31.96	32.2	1	61.71	41.6	30.42	39.4	15		
1	59.59	63.2	32.21	32.3	1	61.97	42.2	30.86	40.9	20		
11	59.83	63.8	32.43	32.2	3	62.20	42.2	31.24	42.9	25		
21	60.04	64.3	32.63	31.9	5	62.41	44.6	31.57	45.4	29		
May 1	60.22	64.7	32.81	31.4	7	62.59	46.2	31.83	48.3	30		
11	60.38	65.0	32.97	30.7	7	62.74	48.0	32.01	51.3	31		
21	60.51	65.2	33.09	30.0	8	62.85	50.0	32.12	54.4	32		
31	60.60	65.4	33.19	29.2	8	62.94	52.0	32.16	57.6	31		
June 10	60.66	65.5	33.25	28.4	8	62.99	53.9	32.12	60.7	29		
20	60.69	65.6	33.28	27.6	7	63.01	55.8	32.01	63.6	26		
30	60.69	65.6	33.27	26.9	7	62.99	57.6	31.83	66.2	23		
July 10	60.65	65.6	33.24	26.2	6	62.94	59.2	31.59	68.5	19		
20	60.57	65.5	33.17	25.6	6	62.85	60.5	31.29	70.4	15		
30	60.47	65.4	33.07	25.0	4	62.73	61.6	30.93	71.9	10		
Aug. 9	60.34	65.3	32.95	24.6	3	62.59	62.4	30.53	72.9	5		
19	60.19	65.1	32.81	24.3	3	62.43	62.9	30.11	73.4	0		
Sept. 29	60.02	64.8	32.65	24.0	1	62.25	63.1	29.67	73.4	5		
8	59.85	64.5	32.49	23.9	0	62.07	63.0	29.22	72.9	10		
18	59.69	64.2	32.33	23.9	2	61.89	62.6	28.77	71.9	15		
28	59.54	63.9	32.19	24.1	3	61.71	61.8	28.34	70.4	20		
Oct. 8	59.42	63.6	32.06	24.4	5	61.56	60.7	27.95	68.4	25		
18	59.33	63.3	31.96	24.9	7	61.44	59.3	27.61	65.9	29		
28	59.28	63.2	31.91	25.6	9	61.36	57.6	27.33	63.0	33		
Nov. 7	59.28	63.2	31.90	26.5	11	61.32	55.6	27.12	59.7	35		
17	59.34	63.3	31.93	27.6	14	61.33	53.3	26.99	56.2	37		
27	59.46	63.6	32.03	29.0	15	{61.38 61.39}	{53.1 53.1}	26.95	52.5	42		
Dec. 7	59.62	64.1	32.16	30.5	16	61.51	47.9	27.01	48.3	38		
17	59.83	64.8	32.35	32.1	17	61.67	45.1	27.17	44.5	37		
27	60.08	65.7	32.58	33.8	17	61.88	42.4	27.41	40.8	35		
37	60.36	66.7	32.83	35.5	24	62.12	39.7	27.73	37.3			

350 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Scorpii. (Antares)		ζ Ophiuchi.		α Trianguli Aust.		ζ Herculis.	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	^h ₁₆ ^m ₂₂ ^o ₂₆ ['] ₁₀		^h ₁₆ ^m ₃₁ ^o ₁₀ ['] ₂₀		^h ₁₆ ^m ₃₆ ^o ₆₈ ['] ₄₉		^h ₁₆ ^m ₃₇ ^o ₃₁ ['] ₄₈	
Jan. 1	33° 78' 29"	56° 0' 6"	0° 65' 26"	23° 1' 13"	50° 14' 59"	5° 2' 15"	4° 04' 25"	14° 8' 30"
11	34° 07' 32"	56° 6' 7"	0° 91' 28"	24° 4' 13"	50° 73' 67"	3° 7' 11"	4° 29' 28"	11° 8' 27"
21	34° 39' 33"	57° 3' 9"	1° 19' 30"	25° 7' 13"	51° 40' 71"	2° 6' 7"	4° 57' 30"	9° 1' 23"
31	34° 72' 34"	58° 2' 9"	1° 49' 30"	27° 0' 12"	52° 11' 75"	1° 9' 2"	4° 87' 32"	6° 8' 18"
Feb. 10	35° 06' 34"	59° 1' 10"	1° 79' 31"	28° 2' 11"	52° 86' 76"	1° 7' 1"	5° 19' 33"	5° 0' 13"
20	35° 40' 33"	60° 1' 9"	2° 10' 31"	29° 3' 9"	53° 62' 77"	1° 8' 6"	5° 52' 32"	3° 7' 8"
Mar. 2	35° 73' 32"	61° 0' 9"	2° 41' 29"	30° 2' 7"	54° 39' 75"	2° 4' 10"	5° 84' 32"	2° 9' 2"
12	36° 05' 31"	61° 9' 9"	2° 70' 28"	30° 9' 5"	55° 14' 72"	3° 4' 13"	6° 16' 30"	2° 7' 4"
22	36° 36' 29"	62° 8' 8"	2° 98' 27"	31° 4' 3"	55° 86' 68"	4° 7' 16"	6° 46' 29"	3° 1' 9"
Apr. 1	36° 65' 26"	63° 6' 8"	3° 25' 25"	31° 7' 1"	56° 54' 64"	6° 3' 19"	6° 75' 26"	4° 0' 13"
11	36° 91' 24"	64° 4' 7"	3° 50' 23"	31° 8' 1"	57° 18' 57"	8° 2' 22"	7° 01' 23"	5° 3' 18"
21	37° 15' 22"	65° 1' 6"	3° 73' 20"	31° 7' 2"	57° 75' 50"	10° 4' 23"	7° 24' 20"	7° 1' 21"
May 1	37° 37' 19"	65° 7' 6"	3° 93' 18"	31° 5' 3"	58° 25' 43"	12° 7' 26"	7° 44' 17"	9° 2' 23"
11	37° 56' 16"	66° 3' 6"	4° 11' 15"	31° 2' 4"	58° 68' 35"	15° 3' 26"	7° 61' 13"	11° 5' 25"
21	37° 72' 13"	66° 9' 5"	4° 26' 12"	30° 8' 5"	59° 03' 26"	17° 9' 27"	7° 74' 10"	14° 0' 25"
31	37° 85' 9"	67° 4' 4"	4° 38' 9"	30° 3' 5"	59° 29' 16"	20° 6' 27"	7° 84' 6"	16° 5' 26"
June 10	37° 94' 5"	67° 8' 5"	4° 47' 5"	29° 8' 4"	59° 45' 6"	23° 3' 26"	7° 90' 1"	19° 1' 24"
20	37° 99' 1"	68° 3' 4"	4° 52' 2"	29° 4' 5"	59° 51' 3"	25° 9' 25"	7° 91' 2"	21° 5' 23"
30	38° 00' 3"	68° 7' 3"	4° 54' 2"	28° 9' 4"	59° 48' 14"	28° 4' 23"	7° 89' 7"	23° 8' 20"
July 10	37° 97' 6"	69° 0' 2"	4° 52' 5"	28° 5' 4"	59° 34' 23"	30° 7' 20"	7° 82' 10"	25° 8' 18"
20	37° 91' 10"	69° 2' 2"	4° 47' 8"	28° 1' 4"	59° 11' 31"	32° 7' 17"	7° 72' 14"	27° 6' 15"
30	37° 81' 13"	69° 4' 1"	4° 39' 12"	27° 7' 3"	58° 80' 40"	34° 4' 13"	7° 58' 19"	29° 1' 11"
Aug. 9	37° 68' 15"	69° 5' 0"	4° 27' 14"	27° 4' 2"	58° 40' 45"	35° 7' 9"	7° 41' 17"	30° 2' 8"
19	37° 53' 17"	69° 5' 2"	4° 13' 15"	27° 2' 2"	57° 95' 49"	36° 6' 5"	7° 22' 20"	31° 0' 3"
29	37° 36' 18"	69° 3' 2"	3° 98' 17"	27° 0' 2"	57° 46' 52"	37° 1' 1"	7° 02' 22"	31° 3' 0"
Sept. 8	37° 18' 18"	69° 1' 3"	3° 81' 16"	26° 8' 0"	56° 94' 52"	37° 0' 5"	6° 80' 22"	31° 3' 5"
18	37° 00' 17"	68° 8' 4"	3° 65' 16"	26° 7' 0"	56° 42' 48"	36° 5' 10"	6° 58' 22"	30° 8' 9"
28	36° 83' 15"	68° 4' 5"	3° 49' 14"	26° 7' 1"	55° 94' 43"	35° 5' 14"	6° 36' 19"	29° 9' 13"
Oct. 8	36° 68' 11"	67° 9' 5"	3° 35' 11"	26° 8' 2"	55° 51' 36"	34° 1' 18"	6° 17' 16"	28° 6' 17"
18	36° 57' 7"	67° 4' 5"	3° 24' 7"	27° 0' 3"	55° 15' 27"	32° 3' 21"	6° 01' 13"	26° 9' 21"
28	36° 50' 3"	66° 9' 4"	3° 17' 3"	27° 3' 5"	54° 88' 16"	30° 2' 24"	5° 88' 8"	24° 8' 24"
Nov. 7	36° 48' 3"	66° 5' 3"	3° 14' 1"	27° 8' 6"	54° 72' 4"	27° 8' 24"	5° 80' 4"	22° 4' 27"
17	36° 51' 9"	66° 2' 1"	3° 15' 7"	28° 4' 8"	54° 68' 9"	25° 4' 25"	5° 76' 2"	19° 7' 29"
27	36° 60' 15"	66° 1' 0"	3° 22' 13"	29° 2' 11"	54° 77' 24"	22° 9' 26"	5° 78' 9"	16° 8' 34"
Dec. 7	36° 75' 20"	66° 1' 1"	3° 35' 17"	30° 3' 11"	55° 01' 35"	20° 3' 23"	5° 87' 13"	13° 4' 32"
17	36° 95' 24"	66° 2' 4"	3° 52' 21"	31° 4' 12"	55° 36' 46"	18° 0' 20"	6° 00' 19"	10° 2' 32"
27	37° 19' 28"	66° 6' 6"	3° 73' 25"	32° 6' 13"	55° 82' 55"	16° 0' 16"	6° 19' 22"	7° 0' 30"
37	37° 47' 28"	67° 2' 6"	3° 98' 25"	33° 9' 13"	56° 37' 55"	14° 4' 16"	6° 41' 22"	4° 0' 30"

APPARENT PLACES OF STARS, 1889. 351

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	κ Ophiuchi.			ε Ursæ Minoris.			η Ophiuchi.			α ¹ Herculis.		
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.	
	^h ^m ^s 16 52 9 32			^h ^m ^s 16 57 82 12			^h ^m ^s 17 3 15 35			^h ^m ^s 17 9 14 30		
Jan. 1	22 ^h 69 ^m 55 ^s 6	22		14 ^h 12 ^m 63 ^s 7	29		58 ^h 38 ^m 5 ^s 8	9		32 ^h 98 ^m 64 ^s 0	24	
11	22 ^h 92 ^m 53 ^s 4	20		14 ^h 86 ^m 60 ^s 4	29		58 ^h 62 ^m 6 ^s 7	9		33 ^h 19 ^m 61 ^s 6	22	
21	23 ^h 17 ^m 51 ^s 4	19		15 ^h 88 ^m 57 ^s 5	25		58 ^h 89 ^m 7 ^s 6	10		33 ^h 43 ^m 59 ^s 4	20	
31	23 ^h 45 ^m 49 ^s 5	16		17 ^h 13 ^m 55 ^s 0	20		59 ^h 18 ^m 8 ^s 6	9		33 ^h 70 ^m 57 ^s 4	17	
Feb. 10	23 ^h 74 ^m 47 ^s 9	12		18 ^h 56 ^m 53 ^s 0	13		59 ^h 48 ^m 9 ^s 5	8		33 ^h 99 ^m 55 ^s 7	14	
20	24 ^h 03 ^m 46 ^s 7	9		20 ^h 12 ^m 51 ^s 7	7		59 ^h 79 ^m 10 ^s 3	7		34 ^h 28 ^m 54 ^s 3	9	
Mar. 2	24 ^h 33 ^m 45 ^s 8	5		21 ^h 75 ^m 51 ^s 0	1		60 ^h 10 ^m 11 ^s 0	6		34 ^h 58 ^m 53 ^s 4	5	
12	24 ^h 62 ^m 45 ^s 3	1		23 ^h 40 ^m 50 ^s 9	7		60 ^h 41 ^m 11 ^s 6	4		34 ^h 87 ^m 52 ^s 9	1	
Apr. 22	24 ^h 90 ^m 45 ^s 2	3		24 ^h 99 ^m 51 ^s 6	12		60 ^h 71 ^m 12 ^s 0	3		35 ^h 16 ^m 52 ^s 8	4	
1	25 ^h 17 ^m 45 ^s 5	6		26 ^h 48 ^m 52 ^s 8	18		61 ^h 00 ^m 12 ^s 3	2		35 ^h 43 ^m 53 ^s 2	8	
11	25 ^h 42 ^m 46 ^s 1	10		27 ^h 81 ^m 54 ^s 6	22		61 ^h 27 ^m 12 ^s 5	0		35 ^h 69 ^m 54 ^s 0	11	
21	25 ^h 65 ^m 47 ^s 1	12		28 ^h 94 ^m 56 ^s 8	26		61 ^h 52 ^m 12 ^s 5	1		35 ^h 94 ^m 55 ^s 1	14	
May 1	25 ^h 86 ^m 48 ^s 3	14		29 ^h 83 ^m 59 ^s 4	29		61 ^h 76 ^m 12 ^s 4	2		36 ^h 16 ^m 56 ^s 5	16	
11	26 ^h 04 ^m 49 ^s 7	15		30 ^h 47 ^m 62 ^s 3	31		61 ^h 97 ^m 12 ^s 2	2		36 ^h 36 ^m 58 ^s 1	18	
21	26 ^h 19 ^m 51 ^s 2	16		30 ^h 83 ^m 65 ^s 4	31		62 ^h 16 ^m 12 ^s 0	3		36 ^h 53 ^m 59 ^s 9	19	
31	26 ^h 32 ^m 52 ^s 8	16		30 ^h 90 ^m 68 ^s 5	31		62 ^h 32 ^m 11 ^s 7	3		36 ^h 67 ^m 61 ^s 8	19	
June 10	26 ^h 41 ^m 54 ^s 4	16		30 ^h 70 ^m 71 ^s 6	31		62 ^h 44 ^m 11 ^s 4	3		36 ^h 77 ^m 63 ^s 7	19	
20	26 ^h 47 ^m 56 ^s 0	16		30 ^h 22 ^m 74 ^s 6	30		62 ^h 53 ^m 11 ^s 2	2		36 ^h 84 ^m 65 ^s 6	19	
30	26 ^h 49 ^m 57 ^s 5	15		29 ^h 48 ^m 77 ^s 4	28		62 ^h 58 ^m 11 ^s 0	2		36 ^h 87 ^m 67 ^s 4	18	
July 10	26 ^h 47 ^m 58 ^s 9	14		28 ^h 50 ^m 79 ^s 9	25		62 ^h 59 ^m 10 ^s 8	2		36 ^h 86 ^m 69 ^s 0	16	
20	26 ^h 42 ^m 60 ^s 1	12		27 ^h 30 ^m 82 ^s 1	22		62 ^h 56 ^m 10 ^s 6	2		36 ^h 82 ^m 70 ^s 5	15	
30	26 ^h 34 ^m 61 ^s 1	10		25 ^h 92 ^m 83 ^s 9	18		62 ^h 49 ^m 10 ^s 4	1		36 ^h 74 ^m 71 ^s 8	13	
Aug. 9	26 ^h 22 ^m 61 ^s 9	8		24 ^h 38 ^m 85 ^s 2	13		62 ^h 39 ^m 10 ^s 3	1		36 ^h 62 ^m 72 ^s 8	10	
19	26 ^h 08 ^m 62 ^s 5	6		22 ^h 72 ^m 86 ^s 0	8		62 ^h 26 ^m 10 ^s 2	1		36 ^h 48 ^m 73 ^s 6	8	
29	25 ^h 92 ^m 62 ^s 9	4		20 ^h 98 ^m 86 ^s 4	4		62 ^h 11 ^m 10 ^s 1	1		36 ^h 32 ^m 74 ^s 1	5	
Sept. 8	25 ^h 75 ^m 63 ^s 0	1		19 ^h 19 ^m 86 ^s 2	2		61 ^h 94 ^m 10 ^s 0	1		36 ^h 14 ^m 74 ^s 3	2	
18	25 ^h 57 ^m 62 ^s 9	1		17 ^h 39 ^m 85 ^s 6	11		61 ^h 77 ^m 10 ^s 0	1		35 ^h 95 ^m 74 ^s 2	4	
28	25 ^h 40 ^m 62 ^s 5	6		15 ^h 64 ^m 84 ^s 5	16		61 ^h 60 ^m 9 ^s 9	0		35 ^h 77 ^m 73 ^s 8	7	
Oct. 8	25 ^h 24 ^m 61 ^s 9	9		13 ^h 96 ^m 82 ^s 9	21		61 ^h 44 ^m 9 ^s 9	0		35 ^h 60 ^m 73 ^s 1	10	
18	25 ^h 11 ^m 61 ^s 0	12		12 ^h 40 ^m 80 ^s 8	25		61 ^h 31 ^m 9 ^s 9	1		35 ^h 45 ^m 72 ^s 1	13	
28	25 ^h 01 ^m 59 ^s 8	14		11 ^h 01 ^m 78 ^s 3	29		61 ^h 21 ^m 10 ^s 0	2		35 ^h 33 ^m 70 ^s 8	15	
Nov. 7	24 ^h 95 ^m 58 ^s 4	17		9 ^h 83 ^m 75 ^s 4	33		61 ^h 16 ^m 10 ^s 2	3		35 ^h 25 ^m 69 ^s 3	18	
17	24 ^h 93 ^m 56 ^s 7	18		8 ^h 88 ^m 72 ^s 1	35		61 ^h 15 ^m 10 ^s 5	4		35 ^h 22 ^m 67 ^s 5	21	
27	24 ^h 96 ^m 54 ^s 9	23		8 ^h 20 ^m 68 ^s 6	39		61 ^h 18 ^m 10 ^s 9	5		35 ^h 23 ^m 65 ^s 4	23	
Dec. 7	25 ^h 05 ^m 52 ^s 6	22		7 ^h 80 ^m 64 ^s 7	37		61 ^h 27 ^m 11 ^s 4	7		35 ^h 29 ^m 63 ^s 1	26	
17	25 ^h 19 ^m 50 ^s 4	22		7 ^h 75 ^m 61 ^s 0	36		61 ^h 42 ^m 12 ^s 1	8		35 ^h 41 ^m 60 ^s 5	24	
27	25 ^h 36 ^m 48 ^s 2	23		8 ^h 02 ^m 57 ^s 4	35		61 ^h 61 ^m 12 ^s 9	9		35 ^h 57 ^m 58 ^s 1	25	
37	25 ^h 57 ^m 45 ^s 9	23		8 ^h 61 ^m 53 ^s 9	35		61 ^h 84 ^m 13 ^s 8	9		35 ^h 76 ^m 55 ^s 6	25	

352 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	θ Ophiuchi.			σ Ophiuchi.			β Draconis.			α Ophiuchi.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s 17 15 24 53	^h ^m ^s 17 20 4 14		^h ^m ^s 17 27 52 22	^h ^m ^s 17 29 12 38							
Jan. 1	9 ^h 02 ^m 8 ^s	8 ^h 25 ^m 17 ^s		52 ^h 87 ^m 59 ^s	44 ^h 65 ^m 30 ^s							
11	9 ^h 27 ^m 25 ^s	9 ^h 1 ^m 3 ^s		53 ^h 08 ^m 21 ^s	44 ^h 85 ^m 23 ^s							
21	9 ^h 55 ^m 28 ^s	9 ^h 5 ^m 4 ^s		53 ^h 35 ^m 27 ^s	45 ^h 08 ^m 23 ^s							
31	9 ^h 85 ^m 30 ^s	10 ^h 0 ^m 5 ^s		53 ^h 67 ^m 32 ^s	45 ^h 33 ^m 23 ^s							
Feb. 10	10 ^h 16 ^m 31 ^s	10 ^h 6 ^m 6 ^s		54 ^h 03 ^m 36 ^s	45 ^h 60 ^m 27 ^s							
20	10 ^h 49 ^m 33 ^s	11 ^h 2 ^m 6 ^s		54 ^h 42 ^m 39 ^s	45 ^h 89 ^m 29 ^s							
Mar. 2	10 ^h 82 ^m 33 ^s	11 ^h 7 ^m 5 ^s		54 ^h 83 ^m 41 ^s	46 ^h 18 ^m 29 ^s							
12	11 ^h 14 ^m 32 ^s	12 ^h 2 ^m 5 ^s		55 ^h 24 ^m 41 ^s	46 ^h 47 ^m 29 ^s							
Apr. 22	11 ^h 46 ^m 32 ^s	12 ^h 7 ^m 5 ^s		55 ^h 65 ^m 41 ^s	46 ^h 76 ^m 29 ^s							
1	11 ^h 77 ^m 31 ^s	13 ^h 1 ^m 4 ^s		56 ^h 05 ^m 40 ^s	47 ^h 04 ^m 28 ^s							
11	12 ^h 07 ^m 30 ^s	13 ^h 4 ^m 3 ^s		56 ^h 42 ^m 37 ^s	47 ^h 31 ^m 27 ^s							
21	12 ^h 35 ^m 28 ^s	13 ^h 7 ^m 3 ^s		56 ^h 76 ^m 34 ^s	47 ^h 57 ^m 26 ^s							
May 1	12 ^h 61 ^m 26 ^s	14 ^h 0 ^m 3 ^s		57 ^h 06 ^m 30 ^s	47 ^h 80 ^m 23 ^s							
11	12 ^h 85 ^m 24 ^s	14 ^h 2 ^m 2 ^s		57 ^h 31 ^m 25 ^s	48 ^h 02 ^m 22 ^s							
21	13 ^h 06 ^m 21 ^s	14 ^h 4 ^m 2 ^s		57 ^h 52 ^m 21 ^s	48 ^h 21 ^m 19 ^s							
31	13 ^h 24 ^m 18 ^s	14 ^h 7 ^m 3 ^s		57 ^h 67 ^m 15 ^s	48 ^h 36 ^m 15 ^s							
June 10	13 ^h 38 ^m 14 ^s	14 ^h 9 ^m 2 ^s		57 ^h 76 ^m 9 ^s	48 ^h 49 ^m 13 ^s							
20	13 ^h 49 ^m 11 ^s	15 ^h 2 ^m 3 ^s		57 ^h 79 ^m 3 ^s	48 ^h 58 ^m 9 ^s							
30	13 ^h 55 ^m 6 ^s	15 ^h 5 ^m 3 ^s		57 ^h 76 ^m 3 ^s	48 ^h 63 ^m 5 ^s							
July 10	13 ^h 57 ^m 2 ^s	15 ^h 8 ^m 3 ^s		57 ^h 67 ^m 9 ^s	48 ^h 64 ^m 1 ^s							
20	13 ^h 55 ^m 2 ^s	16 ^h 1 ^m 3 ^s		57 ^h 53 ^m 14 ^s	48 ^h 61 ^m 3 ^s							
30	13 ^h 49 ^m 6 ^s	16 ^h 3 ^m 2 ^s		57 ^h 33 ^m 20 ^s	48 ^h 55 ^m 6 ^s							
Aug. 9	13 ^h 39 ^m 10 ^s	16 ^h 5 ^m 2 ^s		57 ^h 09 ^m 24 ^s	48 ^h 45 ^m 10 ^s							
19	13 ^h 26 ^m 13 ^s	16 ^h 7 ^m 1 ^s		56 ^h 81 ^m 28 ^s	48 ^h 32 ^m 13 ^s							
29	13 ^h 10 ^m 16 ^s	16 ^h 8 ^m 1 ^s		56 ^h 49 ^m 32 ^s	48 ^h 16 ^m 16 ^s							
Sept. 8	12 ^h 92 ^m 18 ^s	16 ^h 8 ^m 0 ^s		56 ^h 15 ^m 34 ^s	47 ^h 99 ^m 17 ^s							
18	12 ^h 73 ^m 19 ^s	16 ^h 8 ^m 0 ^s		55 ^h 80 ^m 35 ^s	47 ^h 80 ^m 19 ^s							
28	12 ^h 55 ^m 17 ^s	16 ^h 6 ^m 2 ^s		55 ^h 45 ^m 35 ^s	47 ^h 61 ^m 19 ^s							
Oct. 8	12 ^h 38 ^m 15 ^s	16 ^h 4 ^m 2 ^s		55 ^h 11 ^m 34 ^s	47 ^h 44 ^m 17 ^s							
18	12 ^h 23 ^m 15 ^s	16 ^h 2 ^m 2 ^s		54 ^h 80 ^m 31 ^s	47 ^h 29 ^m 15 ^s							
28	12 ^h 12 ^m 11 ^s	15 ^h 9 ^m 3 ^s		54 ^h 52 ^m 28 ^s	47 ^h 16 ^m 13 ^s							
Nov. 7	12 ^h 05 ^m 7 ^s	15 ^h 6 ^m 3 ^s		54 ^h 29 ^m 23 ^s	47 ^h 06 ^m 10 ^s							
17	12 ^h 03 ^m 2 ^s	15 ^h 4 ^m 2 ^s		54 ^h 13 ^m 16 ^s	47 ^h 01 ^m 5 ^s							
27	12 ^h 06 ^m 3 ^s	15 ^h 2 ^m 0 ^s		54 ^h 02 ^m 11 ^s	47 ^h 01 ^m 0 ^s							
Dec. 7	12 ^h 15 ^m 9 ^s	15 ^h 2 ^m 0 ^s		53 ^h 99 ^m 3 ^s	47 ^h 05 ^m 4 ^s							
17	12 ^h 30 ^m 15 ^s	15 ^h 2 ^m 0 ^s		54 ^h 03 ^m 4 ^s	47 ^h 15 ^m 10 ^s							
27	12 ^h 49 ^m 19 ^s	15 ^h 4 ^m 2 ^s		54 ^h 14 ^m 11 ^s	47 ^h 29 ^m 14 ^s							
37	12 ^h 72 ^m 23 ^s	15 ^h 7 ^m 3 ^s		54 ^h 32 ^m 18 ^s	47 ^h 47 ^m 18 ^s							

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AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Ophiuchi.			μ Herculis.			γ Draconis.			ζ Ophiuchi.			
	R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.		
	^h 17	^m 37	^o 4	^h 17	^m 42	^o 27	^h 17	^m 53	^o 51	^h 18	^m 2	^o 9	
Jan. 1	57 ^o 06	19	53 ^o 8	4 ^o 61	18	70 ^o 0	59 ^o 11	17	66 ^o 7	36	2 ^o 99	16	55 ^o 6
11	57 ^o 25	23	52 ^o 0	4 ^o 79	22	67 ^o 1	59 ^o 28	23	63 ^o 1	36	3 ^o 15	20	53 ^o 5
21	57 ^o 48	25	50 ^o 2	5 ^o 01	24	64 ^o 4	59 ^o 51	28	59 ^o 8	33	3 ^o 35	23	51 ^o 5
31	57 ^o 73	27	48 ^o 5	5 ^o 25	28	61 ^o 9	59 ^o 79	33	56 ^o 8	30	3 ^o 58	25	49 ^o 7
Feb. 10	58 ^o 00	28	47 ^o 1	5 ^o 53	31	59 ^o 8	60 ^o 12	37	54 ^o 2	26	3 ^o 83	27	48 ^o 1
20	58 ^o 28	28	45 ^o 9	5 ^o 82	29	58 ^o 1	60 ^o 49	37	52 ^o 2	20	4 ^o 10	27	46 ^o 8
Mar. 2	58 ^o 56	28	45 ^o 1	6 ^o 12	30	56 ^o 9	60 ^o 88	39	50 ^o 8	14	4 ^o 38	28	45 ^o 9
12	58 ^o 85	29	44 ^o 6	6 ^o 43	31	56 ^o 3	61 ^o 28	40	50 ^o 0	8	4 ^o 67	29	45 ^o 3
Apr. 22	59 ^o 14	29	44 ^o 4	6 ^o 74	31	56 ^o 1	61 ^o 68	40	49 ^o 8	2	4 ^o 96	29	45 ^o 2
1	59 ^o 43	29	44 ^o 6	7 ^o 04	30	56 ^o 5	62 ^o 07	39	50 ^o 3	5	5 ^o 24	28	45 ^o 4
11	59 ^o 70	27	45 ^o 1	7 ^o 33	29	57 ^o 4	62 ^o 45	38	51 ^o 4	11	5 ^o 52	27	46 ^o 0
21	59 ^o 96	26	45 ^o 9	7 ^o 60	27	58 ^o 8	62 ^o 81	36	53 ^o 0	16	5 ^o 79	27	46 ^o 9
May 1	60 ^o 20	24	46 ^o 9	7 ^o 85	25	60 ^o 6	63 ^o 13	32	55 ^o 2	22	6 ^o 05	26	48 ^o 2
11	60 ^o 42	22	48 ^o 2	8 ^o 08	23	62 ^o 7	63 ^o 41	28	57 ^o 7	25	6 ^o 29	24	49 ^o 7
21	60 ^o 62	20	49 ^o 6	8 ^o 28	20	65 ^o 0	63 ^o 65	24	60 ^o 6	29	6 ^o 50	21	51 ^o 3
31	60 ^o 79	17	51 ^o 0	8 ^o 44	16	67 ^o 4	63 ^o 84	19	63 ^o 7	31	6 ^o 69	19	53 ^o 0
June 10	60 ^o 93	14	52 ^o 5	8 ^o 57	13	70 ^o 0	63 ^o 97	13	66 ^o 9	32	6 ^o 84	15	54 ^o 8
20	61 ^o 03	10	54 ^o 0	8 ^o 65	8	72 ^o 5	64 ^o 04	7	70 ^o 1	32	6 ^o 96	12	56 ^o 6
30	61 ^o 09	6	55 ^o 4	8 ^o 69	4	74 ^o 9	64 ^o 05	1	73 ^o 2	31	7 ^o 05	9	58 ^o 4
July 10	61 ^o 12	3	56 ^o 7	8 ^o 69	0	77 ^o 2	64 ^o 00	5	76 ^o 1	29	7 ^o 09	4	60 ^o 0
20	61 ^o 11	1	57 ^o 9	8 ^o 65	4	79 ^o 3	63 ^o 89	11	78 ^o 9	28	7 ^o 09	0	61 ^o 5
30	61 ^o 06	5	58 ^o 9	8 ^o 57	8	81 ^o 1	63 ^o 73	16	81 ^o 3	24	7 ^o 05	4	62 ^o 8
Aug. 9	60 ^o 97	12	59 ^o 8	8 ^o 45	16	82 ^o 7	63 ^o 52	21	83 ^o 4	21	6 ^o 98	7	63 ^o 9
19	60 ^o 85	9	60 ^o 4	8 ^o 29	12	83 ^o 9	63 ^o 26	26	85 ^o 1	17	6 ^o 87	11	64 ^o 8
Sept. 29	60 ^o 70	15	60 ^o 9	8 ^o 11	18	84 ^o 7	62 ^o 96	30	86 ^o 4	13	6 ^o 73	14	65 ^o 4
8	60 ^o 54	16	61 ^o 2	7 ^o 91	20	85 ^o 2	62 ^o 64	32	87 ^o 1	7	6 ^o 56	17	65 ^o 8
18	60 ^o 37	17	61 ^o 2	7 ^o 69	22	85 ^o 3	62 ^o 30	34	87 ^o 4	3	6 ^o 38	18	66 ^o 0
28	60 ^o 19	18	61 ^o 1	7 ^o 47	22	85 ^o 0	61 ^o 95	35	87 ^o 2	2	6 ^o 20	18	65 ^o 9
Oct. 8	60 ^o 02	17	60 ^o 7	7 ^o 26	21	84 ^o 3	61 ^o 61	34	86 ^o 5	7	6 ^o 02	18	65 ^o 6
18	59 ^o 87	15	60 ^o 1	7 ^o 07	19	83 ^o 2	61 ^o 28	33	85 ^o 2	13	5 ^o 86	16	64 ^o 9
28	59 ^o 74	13	59 ^o 3	6 ^o 90	17	81 ^o 7	60 ^o 99	29	83 ^o 5	17	5 ^o 71	15	64 ^o 0
Nov. 7	59 ^o 65	9	58 ^o 2	6 ^o 77	13	79 ^o 9	60 ^o 75	24	81 ^o 3	22	5 ^o 60	11	62 ^o 9
17	59 ^o 60	5	56 ^o 9	6 ^o 68	9	77 ^o 7	60 ^o 55	20	78 ^o 7	26	5 ^o 53	7	61 ^o 5
27	59 ^o 59	1	55 ^o 4	6 ^o 64	4	75 ^o 2	60 ^o 41	14	75 ^o 7	30	5 ^o 50	3	59 ^o 9
Dec. 7	59 ^o 64	9	53 ^o 8	6 ^o 65	6	72 ^o 4	60 ^o 34	7	72 ^o 4	33	5 ^o 52	2	58 ^o 1
17	59 ^o 73	14	51 ^o 9	6 ^o 71	12	68 ^o 1	60 ^o 34	0	68 ^o 9	35	5 ^o 58	6	56 ^o 1
27	59 ^o 87	18	50 ^o 0	6 ^o 83	12	66 ^o 3	60 ^o 41	7	64 ^o 9	40	5 ^o 69	11	53 ^o 8
37	60 ^o 05	19	48 ^o 1	6 ^o 99	16	63 ^o 3	60 ^o 55	14	61 ^o 4	35	5 ^o 84	15	51 ^o 8

54 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	μ Sagittarii.				η Serpentis.				λ Sagittarii.				α Lyrae. (Vega)			
	R. A.		Dec. S.		R. A.		Dec. S.		R. A.		Dec. S.		R. A.		Dec. N.	
	^h 18	^m 7	^o 21	['] 5	^h 18	^m 15	^o 2	['] 55	^h 18	^m 21	^o 25	['] 28	^h 18	^m 33	^o 38	['] 40
Jan. 1	4 ^s 91		10 ^s 4		31 ^s 63		34 ^s 4		4 ^s 55		53 ^s 5		8 ^s 45		51 ^s 2	
11	5 ^s 10	19	10 ^s 7	3	31 ^s 79	16	35 ^s 8	14	4 ^s 73	18	53 ^s 5	0	8 ^s 57	12	48 ^s 0	32
21	5 ^s 33	23	11 ^s 0	3	31 ^s 98	19	37 ^s 1	13	4 ^s 95	22	53 ^s 5	0	8 ^s 74	17	44 ^s 9	31
31	5 ^s 58	25	11 ^s 4	4	32 ^s 21	23	38 ^s 3	12	5 ^s 20	25	53 ^s 5	0	8 ^s 95	21	42 ^s 0	29
		28		3		25		11		28		1		24		25
Feb. 10	5 ^s 86		11 ^s 7		32 ^s 46		39 ^s 4		5 ^s 48		53 ^s 6		9 ^s 19		39 ^s 5	
20	6 ^s 15	29	12 ^s 0	3	32 ^s 72	26	40 ^s 3	9	5 ^s 77	29	53 ^s 6	0	9 ^s 47	28	37 ^s 4	21
Mar. 2	6 ^s 46	31	12 ^s 2	2	33 ^s 00	28	41 ^s 0	7	6 ^s 08	31	53 ^s 6	0	9 ^s 78	31	35 ^s 8	16
12	6 ^s 77	31	12 ^s 4	2	33 ^s 28	28	41 ^s 4	4	6 ^s 40	32	53 ^s 6	0	10 ^s 10	32	34 ^s 7	11
		32		0		29		1		33		0		33		5
Apr. 22	7 ^s 09		12 ^s 4		33 ^s 57		41 ^s 5		6 ^s 73		53 ^s 6		10 ^s 43		34 ^s 2	
1	7 ^s 40	31	12 ^s 4	0	33 ^s 86	29	41 ^s 4	1	7 ^s 05	32	53 ^s 5	1	10 ^s 76	33	34 ^s 4	2
11	7 ^s 71	31	12 ^s 3	1	34 ^s 15	29	41 ^s 0	4	7 ^s 38	33	53 ^s 3	2	11 ^s 10	34	35 ^s 1	7
21	8 ^s 01	30	12 ^s 1	2	34 ^s 43	28	40 ^s 3	7	7 ^s 69	31	53 ^s 1	2	11 ^s 42	32	36 ^s 3	12
		29		2		26		9		31		2		31		18
May 1	8 ^s 30		11 ^s 9		34 ^s 69		39 ^s 4		8 ^s 00		52 ^s 9		11 ^s 73		38 ^s 1	
11	8 ^s 57	27	11 ^s 6	3	34 ^s 94	25	38 ^s 5	9	8 ^s 29	29	52 ^s 8	1	12 ^s 01	28	40 ^s 3	22
21	8 ^s 82	25	11 ^s 4	2	35 ^s 17	23	37 ^s 4	11	8 ^s 55	26	52 ^s 7	1	12 ^s 26	25	42 ^s 8	25
31	9 ^s 04	22	11 ^s 2	2	35 ^s 38	21	36 ^s 2	12	8 ^s 79	24	52 ^s 7	0	12 ^s 48	22	45 ^s 5	27
		19		2		17		12		21		1		18		30
June 10	9 ^s 23		11 ^s 0		35 ^s 55		35 ^s 0		9 ^s 00		52 ^s 6		12 ^s 66		48 ^s 5	
20	9 ^s 38	15	10 ^s 9	1	35 ^s 69	14	33 ^s 8	12	9 ^s 17	17	52 ^s 7	1	12 ^s 79	13	51 ^s 5	30
30	9 ^s 49	11	10 ^s 8	1	35 ^s 80	11	32 ^s 7	11	9 ^s 30	13	52 ^s 9	3	12 ^s 87	8	54 ^s 5	30
July 10	9 ^s 56	7	10 ^s 9	1	35 ^s 87	7	31 ^s 7	10	9 ^s 39	9	53 ^s 2	3	12 ^s 91	4	57 ^s 4	29
		2		1		2		9		4		4		1		27
20	9 ^s 58		11 ^s 0		35 ^s 89		30 ^s 8		9 ^s 43		53 ^s 6		12 ^s 90		60 ^s 1	
30	9 ^s 56	6	11 ^s 1	2	35 ^s 87	6	30 ^s 1	7	9 ^s 42	1	53 ^s 9	3	12 ^s 83	7	62 ^s 6	25
Aug. 9	9 ^s 50		11 ^s 3		35 ^s 81		29 ^s 4		9 ^s 37		54 ^s 3		12 ^s 72		64 ^s 8	
19	9 ^s 40	10	11 ^s 5	2	35 ^s 72	9	28 ^s 9	5	9 ^s 28	9	54 ^s 7	4	12 ^s 56	16	66 ^s 7	19
		13		1		13		3		13		4		20		15
29	9 ^s 27	16	11 ^s 6	2	35 ^s 59	15	28 ^s 6	2	9 ^s 15	16	55 ^s 1	3	12 ^s 36		68 ^s 2	
Sept. 8	9 ^s 11	18	11 ^s 8	2	35 ^s 44	17	28 ^s 4	0	8 ^s 99	18	55 ^s 4	3	12 ^s 14	22	69 ^s 4	12
18	8 ^s 93	18	12 ^s 0	1	35 ^s 27	17	28 ^s 4	1	8 ^s 81	19	55 ^s 7	2	11 ^s 90	26	70 ^s 1	2
28	8 ^s 75	18	12 ^s 1		35 ^s 10	18	28 ^s 5		8 ^s 62	19	55 ^s 9		11 ^s 64		70 ^s 3	
		18		0		18		3		19		1		26		2
Oct. 8	8 ^s 57		12 ^s 1		34 ^s 92		28 ^s 8		8 ^s 43		56 ^s 0		11 ^s 38		70 ^s 1	
18	8 ^s 41	16	12 ^s 2	1	34 ^s 76	16	29 ^s 2	4	8 ^s 26	17	56 ^s 0	0	11 ^s 13	25	69 ^s 4	7
28	8 ^s 27	14	12 ^s 2	0	34 ^s 62	14	29 ^s 7	5	8 ^s 11	15	55 ^s 9	1	10 ^s 89	24	68 ^s 2	12
Nov. 7	8 ^s 16	11	12 ^s 2	0	34 ^s 51	11	30 ^s 4	7	7 ^s 99	12	55 ^s 8	1	10 ^s 69	20	66 ^s 6	16
		6		0		7		9		8		2		16		20
17	8 ^s 10		12 ^s 2		34 ^s 44		31 ^s 3		7 ^s 91		55 ^s 6		10 ^s 53		64 ^s 6	
27	8 ^s 08	2	12 ^s 2	0	34 ^s 41	3	32 ^s 3	10	7 ^s 88	3	55 ^s 5	1	10 ^s 41	12	62 ^s 2	24
Dec. 7	8 ^s 11	3	12 ^s 3	1	34 ^s 42	1	33 ^s 4	11	7 ^s 90	2	55 ^s 3	2	10 ^s 34	7	59 ^s 5	27
17	8 ^s 19	8	12 ^s 5	2	34 ^s 48	6	34 ^s 6	12	7 ^s 97	7	55 ^s 2	1	10 ^s 32	2	56 ^s 5	30
		14		2		11		15		12		1		4		32
27	8 ^s 33		12 ^s 7		34 ^s 59		36 ^s 1		8 ^s 09		55 ^s 1		10 ^s 36		53 ^s 3	
37	8 ^s 50	17	13 ^s 0	3	34 ^s 74	15	37 ^s 5	14	8 ^s 26	17	55 ^s 0	1	10 ^s 46	10	49 ^s 7	36

APPARENT PLACES OF STARS, 1889. 35.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Lyræ.				α Aquilæ.				ζ Aquilæ.				η Aquilæ.			
	R. A.		Dec. N.		R. A.		Dec. N.		R. A.		Dec. N.		R. A.		Dec. N.	
	^h 18	^m 45	^o 33	['] 13	^h 18	^m 54	^o 14	['] 54	^h 19	^m 0	^o 13	['] 41	^h 19	^m 12	^o 11	['] 23
Jan. 1	56°59	10	63°9	30	32°76	12	65°5	24	16°17	11	57°4	23	34°11	9	45°7	22
11	56°69	16	60°9	30	32°88	15	63°1	22	16°28	15	55°1	21	34°20	14	43°5	19
21	56°85	19	57°9	28	33°03	18	60°9	20	16°43	18	53°0	20	34°34	17	41°6	18
31	57°04	23	55°1	24	33°21	21	58°9	18	16°61	21	51°0	17	34°51	19	39°8	16
Feb. 10	57°27	26	52°7	21	33°42	24	57°1	15	16°82	23	49°3	15	34°70	22	38°2	14
20	57°53	28	50°6	16	33°66	25	55°6	11	17°05	25	47°8	11	34°92	25	36°8	10
Mar. 2	57°81	30	49°0	10	33°91	27	54°5	8	17°30	27	46°7	7	35°17	26	35°8	7
12	58°11	31	48°0	5	34°18	29	53°7	3	17°57	28	46°0	3	35°43	27	35°1	2
Apr. 22	58°42	32	47°5	0	34°47	29	53°4	2	17°85	28	45°7	2	35°70	29	34°9	1
1	58°74	32	47°5	6	34°76	29	53°6	5	18°13	29	45°9	5	35°99	29	35°0	5
11	59°06	31	48°1	12	35°05	29	54°1	10	18°42	29	46°4	9	36°28	29	35°5	9
21	59°37	30	49°3	16	35°34	28	55°1	13	18°71	29	47°3	13	36°57	29	36°4	13
May 1	59°67	28	50°9	20	35°62	27	56°4	16	19°00	27	48°6	16	36°86	28	37°7	15
11	59°95	25	52°9	24	35°89	25	58°0	19	19°27	25	50°2	18	37°14	26	39°2	18
21	60°20	23	55°3	26	36°14	23	59°9	20	19°52	23	52°0	20	37°40	24	41°0	19
31	60°43	19	57°9	27	36°37	20	61°9	21	19°75	21	54°0	21	37°64	21	42°9	20
June 10	60°62	15	60°6	29	36°57	16	64°0	22	19°96	17	56°1	21	37°85	18	44°9	21
20	60°77	10	63°5	28	36°73	13	66°2	22	20°13	17	58°2	21	38°03	15	47°0	20
30	60°87	6	66°3	28	36°86	8	68°4	20	20°26	13	60°3	20	38°18	11	49°0	19
July 10	60°93	1	69°1	26	36°94	4	70°4	19	20°35	5	62°3	19	38°29	6	50°9	18
20	60°94	4	71°7	24	36°98	0	72°3	18	20°40	1	64°2	18	38°35	1	52°7	17
30	60°90	9	74°1	22	36°98	4	74°1	16	20°41	4	66°0	15	38°36	2	54°4	15
Aug. 9	60°81	13	76°3	19	36°94	9	75°7	13	20°37	8	67°5	13	38°34	7	55°9	12
19	60°68	16	78°2	15	36°85	12	77°0	10	20°29	12	68°8	10	38°27	10	57°1	10
Sept. 29	60°52	20	79°7	11	36°73	15	78°0	8	20°17	14	69°8	8	38°17	13	58°1	8
8	60°32	22	80°8	8	36°58	17	78°8	5	20°03	17	70°6	5	38°04	16	58°9	5
18	60°10	23	81°6	3	36°41	18	79°3	1	19°86	18	71°1	2	37°88	18	59°4	2
28	59°87	24	81°9	1	36°23	19	79°4	1	19°68	18	71°3	1	37°70	18	59°6	1
Oct. 8	59°63	23	81°8	6	36°04	18	79°3	4	19°50	18	71°2	4	37°52	18	59°5	3
18	59°40	21	81°2	10	35°86	17	78°9	7	19°32	17	70°8	7	37°34	17	59°2	6
28	59°19	19	80°2	14	35°69	15	78°2	11	19°15	15	70°1	10	37°17	15	58°6	9
Nov. 7	59°00	15	78°8	18	35°54	11	77°1	13	19°00	12	69°1	13	37°02	12	57°7	11
17	58°85	11	77°0	22	35°43	8	75°8	16	18°88	8	67°8	15	36°90	8	56°6	14
27	58°74	7	74°8	25	35°35	4	74°2	18	18°80	4	66°3	18	36°82	4	55°2	16
Dec. 7	58°67	2	72°3	28	35°31	0	72°4	20	18°76	0	64°5	19	36°78	1	53°6	17
17	58°65	3	69°5	29	35°31	5	70°4	22	18°76	5	62°6	20	36°77	4	51°9	19
27	58°68	9	66°6	33	35°36	10	68°2	24	18°81	10	60°6	24	36°81	7	50°0	20
37	58°77	9	63°3	33	35°46	10	65°8	24	18°91	10	58°2	24	{58°2}	{47°3}		

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	δ Aquilæ.			λ Sagittarii.			γ Aquilæ.			α Aquilæ. (Altair)		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	h m	° '		h m	° '		h m	° '		h m	° '	
	19 19	2 53		19 29	25 7		19 40	10 20		19 45	8 34	
Jan. 1	51.76	38.7	16	54.47	41.2	2	56.74	35.6	19	19.83	32.2	17
11	51.87	37.1	15	54.59	41.0	3	56.80	33.7	20	19.90	30.5	17
21	52.00	35.6	13	54.74	40.7	4	56.92	31.7	21	20.01	28.6	16
31	52.17	34.3	12	54.92	40.3	5	57.06	30.0	17	20.15	27.0	16
Feb. 10	52.36	33.1	10	55.14	40.0	6	57.23	28.5	15	20.32	25.6	14
20	52.58	32.1	9	55.39	39.6	7	57.43	27.2	13	20.51	24.4	12
Mar. 2	52.82	31.4	7	55.65	39.1	8	57.65	26.2	10	20.73	23.5	9
12	53.08	31.0	6	55.94	38.5	9	57.90	25.6	6	20.98	22.9	6
22	53.35	30.9	5	56.24	37.9	10	58.16	25.3	3	21.24	22.7	5
Apr. 1	53.63	31.2	4	56.56	37.2	11	58.44	25.4	1	21.52	22.9	4
11	53.92	31.8	3	56.88	36.5	12	58.73	25.9	5	21.81	23.4	3
21	54.22	32.6	2	57.21	35.8	13	59.02	26.8	9	22.10	24.3	2
May 1	54.51	33.7	1	57.54	35.1	14	59.31	28.0	12	22.39	25.5	1
11	54.79	35.1	14	57.86	34.4	15	59.60	29.5	15	22.68	26.9	14
21	55.06	36.6	13	58.17	33.7	16	59.88	31.2	17	22.96	28.6	13
31	55.31	38.2	12	58.46	33.2	17	60.14	33.1	19	23.23	30.5	12
June 10	55.53	39.9	11	58.73	32.8	18	60.37	35.1	20	23.47	32.5	11
20	55.72	41.6	10	58.97	32.6	19	60.58	37.2	21	23.68	34.5	10
30	55.88	43.2	9	59.17	32.5	20	60.75	39.2	20	23.86	36.5	9
July 10	56.00	44.8	8	59.32	32.5	21	60.89	41.2	18	23.99	38.4	8
20	56.08	46.2	7	59.43	32.7	22	60.98	43.0	17	24.09	40.2	7
30	56.11	47.4	6	59.49	33.0	23	61.02	44.7	16	24.14	41.8	6
Aug. 9	56.10	48.5	5	59.50	33.4	24	61.02	46.3	15	24.15	43.3	5
19	56.05	49.4	4	59.46	33.9	25	60.98	47.6	14	24.12	44.5	4
29	55.96	50.1	3	59.38	34.4	26	60.90	48.7	13	24.04	45.5	3
Sept. 8	55.84	50.6	2	59.26	35.0	27	60.78	49.5	12	23.93	46.3	2
18	55.69	50.9	1	59.11	35.5	28	60.64	50.1	11	23.79	46.9	1
28	55.53	51.0	18	58.94	36.0	29	60.48	50.4	10	23.64	47.2	18
Oct. 8	55.35	50.8	17	58.76	36.4	30	60.31	50.5	9	23.47	47.2	17
18	55.18	50.5	16	58.58	36.8	31	60.13	50.3	8	23.29	47.0	16
28	55.03	50.0	15	58.41	37.0	32	59.96	49.8	7	23.13	46.6	15
Nov. 7	54.89	49.3	14	58.25	37.1	33	59.80	49.1	6	22.98	45.9	14
17	54.77	48.4	13	58.13	37.2	34	59.67	48.1	5	22.85	45.0	13
27	54.69	47.4	12	58.04	37.2	35	59.57	46.9	4	22.75	43.8	12
Dec. 7	54.65	46.2	11	58.00	37.1	36	59.51	45.4	3	22.68	42.5	11
17	54.64	44.8	10	58.00	36.9	37	59.48	43.8	2	22.65	41.0	10
27	54.68	43.4	9	58.04	36.7	38	59.49	42.1	1	22.66	39.4	9
37	54.76	41.9	8	58.13	36.5	39	59.54	40.3	18	22.71	37.7	8

APPARENT PLACES OF STARS, 1889. 35

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	β Aquilæ.			θ Aquilæ.			α Capricorni.			α Pavonia.						
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.					
	^h 19	^m 49	[°] 6	['] 7	^h 20	^m 5	[°] 1	['] 8	^h 20	^m 11	[°] 12	['] 53	^h 20	^m 16	[°] 57	['] 5
Jan. 1	49°43	6	47°3	16	32°39	5	62°4	11	51°35	6	21°5	4	47°70	6	29°9	2
11	49°49	11	45°7	17	32°44	10	63°5	12	51°41	10	21°9	4	47°76	13	27°8	21
21	49°60	13	44°0	15	32°54	12	64°7	10	51°51	12	22°3	3	47°89	20	25°1	23
31	49°73	17	42°5	13	32°66	16	65°7	8	51°63	16	22°6	1	48°10	26	22°9	24
Feb. 10	49°90	19	41°2	11	32°82	18	66°5	7	51°79	19	22°7	0	48°36	31	20°6	23
20	50°09	22	40°1	9	33°00	21	67°2	5	51°98	21	22°7	1	48°67	36	18°3	22
Mar. 2	50°31	24	39°2	5	33°21	23	67°7	2	52°19	24	22°6	3	49°03	40	16°1	20
12	50°55	26	38°7	1	33°44	25	67°9	1	52°43	26	22°3	5	49°43	44	14°1	18
22	50°81	27	38°6	2	33°69	27	67°8	4	52°69	27	21°8	7	49°87	48	12°3	16
Apr. 1	51°08	29	38°8	5	33°96	29	67°4	7	52°96	29	21°1	9	50°35	50	10°7	14
11	51°37	29	39°3	9	34°25	29	66°7	9	53°25	31	20°2	10	50°85	51	9°3	10
21	51°66	30	40°2	11	34°54	30	65°8	12	53°56	31	19°2	11	51°36	52	8°3	8
May 1	51°96	38	41°3	14	34°84	30	64°6	13	53°87	31	18°1	12	51°88	52	7°5	4
11	52°24	38	42°7	17	35°14	29	63°3	15	54°18	30	16°9	13	52°40	51	7°1	1
21	52°52	37	44°4	18	35°43	28	61°8	16	54°48	30	15°6	12	52°91	49	7°0	2
31	52°79	25	46°2	18	35°71	25	60°2	16	54°78	27	14°4	12	53°40	46	7°2	6
June 10	53°04	22	48°0	19	35°96	23	58°6	16	55°05	25	13°2	11	53°86	41	7°8	10
20	53°26	18	49°9	18	36°19	20	57°0	16	55°30	21	12°1	10	54°27	36	8°8	13
30	53°44	14	51°7	18	36°39	17	55°4	15	55°51	18	11°1	8	54°63	29	10°1	15
July 10	53°58	10	53°5	16	36°56	12	53°9	13	55°69	14	10°3	7	54°92	23	11°6	17
20	53°68	6	55°1	15	36°68	8	52°6	11	55°83	9	9°6	5	55°15	15	13°3	20
30	53°74	3	56°6	14	36°76	3	51°5	10	55°92	5	9°1	3	55°30	7	15°3	20
Aug. 9	53°75	3	58°0	11	36°79	1	50°5	8	55°97	0	8°8	2	55°37	1	17°3	21
19	53°72	7	59°1	9	36°78	5	49°7	6	55°97	4	8°6	0	55°36	9	19°4	21
29	53°65	10	60°0	7	36°73	9	49°1	4	55°93	8	8°6	1	55°27	16	21°5	19
Sept. 8	53°55	14	60°7	5	36°64	12	48°7	3	55°85	12	8°7	2	55°11	22	23°4	17
18	53°41	15	61°2	2	36°52	14	48°4	1	55°73	14	8°9	3	54°89	26	25°1	15
28	53°26	17	61°4	0	36°38	16	48°3	1	55°59	16	9°2	3	54°63	30	26°6	12
Oct. 8	53°09	17	61°4	2	36°22	17	48°4	3	55°43	16	9°5	4	54°33	31	27°8	7
18	52°92	15	61°2	5	36°05	17	48°7	4	55°27	16	9°9	5	54°02	32	28°5	4
28	52°75	13	60°7	7	35°88	15	49°1	6	55°11	15	10°4	5	53°70	31	28°9	1
Nov. 7	52°60	13	60°0	9	35°73	12	49°7	7	54°96	13	10°9	5	53°39	27	28°8	5
17	52°47	10	59°1	10	35°61	10	50°4	8	54°83	10	11°4	4	53°12	23	28°3	9
27	52°37	6	58°1	13	35°51	7	51°2	9	54°73	7	11°8	5	52°89	18	27°4	13
Dec. 7	52°31	3	56°8	14	35°44	3	52°1	10	54°66	4	12°3	5	52°71	11	26°1	16
17	52°28	0	55°4	15	35°41	0	53°1	11	54°62	0	12°8	4	52°60	4	24°5	19
27	52°28	5	53°9	16	35°41	3	54°2	11	54°62	4	13°2	4	52°56	3	22°6	21
37	52°33		52°3		35°44		55°3		54°66		13°6		52°59		20°5	

358 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♑ Capricorni.			♓ Delphini.			α Cygni.			♒ Aquarii.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. S.	
	^h 20	^m 22	^o 18	^h 20	^m 27	^o 10	^h 20	^m 37	^o 44	^h 20	^m 41	^o 9
Jan. 1	29 ⁵ .26	52 ⁵ .5	1	52 ⁵ .48	34 ² .17	17	36 ⁵ .66	67 ² .29	37 ⁵ .74	69 ⁸ .8	5	
11	29 ⁸ .31	52 ⁶ .6	0	52 ⁶ .50	32 ⁵ .17	17	36 ⁶ .61	64 ³ .30	37 ⁷ .77	70 ³ .3	5	
21	29 ¹³ .39	52 ⁶ .6	1	52 ⁶ .56	30 ⁸ .18	18	36 ⁶ .60	61 ³ .34	37 ⁸ .82	70 ⁸ .8	5	
31	29 ¹⁶ .52	52 ⁵ .5	2	52 ⁶ .65	29 ⁰ .15	15	36 ⁶ .65	57 ⁹ .30	37 ⁹ .92	71 ² .2	2	
Feb. 10	29 ¹⁸ .68	52 ³ .3	3	52 ⁷ .78	27 ⁵ .13	13	36 ⁷ .76	54 ⁹ .27	38 ⁰ .05	71 ⁴ .4	1	
20	29 ²¹ .86	52 ⁰ .3	5	52 ⁷ .94	26 ² .10	10	36 ⁹ .91	52 ² .25	38 ² .21	71 ⁵ .5	1	
Mar. 2	30 ²³ .07	51 ⁵ .6	6	53 ¹² .12	25 ² .7	7	37 ¹¹ .11	49 ⁷ .20	38 ³ .39	71 ⁴ .4	3	
12	30 ²⁶ .30	50 ⁹ .8	8	53 ²⁴ .33	24 ⁵ .3	3	37 ²⁸ .35	47 ⁷ .15	38 ⁶ .60	71 ¹ .1	5	
22	30 ²⁸ .56	50 ¹ .9	9	53 ²⁶ .57	24 ² .0	0	37 ³² .63	46 ² .10	38 ⁸ .83	70 ⁶ .6	8	
Apr. 1	30 ³⁰ .84	49 ² .10	10	53 ²⁷ .83	24 ² .5	5	37 ³⁴ .95	45 ² .4	39 ⁰ .09	69 ⁸ .8	9	
11	31 ³¹ .14	48 ² .11	11	54 ²⁹ .10	24 ⁷ .8	8	38 ³⁶ .29	44 ⁸ .2	39 ³ .37	68 ⁹ .9	11	
21	31 ³¹ .45	47 ¹ .11	11	54 ³⁰ .39	25 ⁵ .11	11	38 ³⁷ .65	45 ⁰ .8	39 ⁶ .67	67 ⁸ .8	13	
May 1	31 ³² .76	46 ⁰ .12	12	54 ³⁰ .69	26 ⁶ .15	15	39 ³⁷ .02	45 ⁸ .14	39 ⁹ .97	66 ⁵ .5	13	
11	32 ³² .08	44 ⁸ .12	12	54 ³⁰ .99	28 ¹ .17	17	39 ³⁵ .39	47 ² .18	40 ² .28	65 ² .2	14	
21	32 ³² .40	43 ⁶ .11	11	55 ²⁸ .29	29 ⁸ .19	19	39 ³⁴ .74	49 ⁰ .23	40 ⁵ .59	63 ⁸ .8	15	
31	32 ²⁸ .71	42 ⁵ .10	10	55 ²⁷ .57	31 ⁷ .27	27	40 ³¹ .08	51 ³ .26	40 ⁸ .89	62 ³ .3	14	
June 10	32 ²⁶ .99	41 ⁵ .9	9	55 ²⁴ .84	33 ⁸ .21	21	40 ²⁸ .39	53 ⁹ .29	41 ¹⁷ .17	60 ⁹ .9	14	
20	33 ²³ .25	40 ⁶ .8	8	56 ²¹ .08	35 ⁹ .22	22	40 ²³ .67	56 ⁸ .31	41 ²⁴ .44	59 ⁵ .5	13	
30	33 ²⁰ .48	39 ⁸ .6	6	56 ¹⁸ .29	38 ¹ .21	21	40 ¹⁸ .90	59 ⁹ .33	41 ²⁸ .68	58 ² .2	11	
July 10	33 ¹⁵ .68	39 ² .4	4	56 ¹³ .47	40 ² .20	20	41 ¹³ .08	63 ² .33	41 ¹⁶ .88	57 ¹ .1	9	
20	33 ¹¹ .83	38 ⁸ .2	2	56 ⁹ .60	42 ² .19	19	41 ⁷ .21	66 ⁵ .32	42 ⁰⁴ .04	56 ² .2	8	
30	33 ⁶ .94	38 ⁶ .0	0	56 ⁴ .69	44 ¹ .17	17	41 ¹ .28	69 ⁷ .31	42 ¹⁶ .16	55 ⁴ .4	5	
Aug. 9	34 ¹ .00	38 ⁶ .1	1	56 ⁰ .73	45 ⁸ .15	15	41 ²⁹ .29	72 ⁸ .30	42 ²³ .23	54 ⁹ .9	4	
19	34 ³ .01	38 ⁷ .2	2	56 ⁴ .73	47 ³ .13	13	41 ⁹ .25	75 ⁸ .27	42 ²⁵ .25	54 ⁵ .5	2	
29	33 ⁸ .98	38 ⁹ .4	4	56 ⁸ .69	48 ⁶ .10	10	41 ¹⁵ .16	78 ⁵ .24	42 ²⁴ .24	54 ³ .3	1	
Sept. 8	33 ¹¹ .90	39 ³ .4	4	56 ¹¹ .61	49 ⁶ .8	8	41 ¹⁹ .01	80 ⁹ .21	42 ¹⁸ .18	54 ² .2	1	
18	33 ¹⁴ .79	39 ⁷ .5	5	56 ¹⁴ .50	50 ⁴ .5	5	40 ²² .82	83 ⁰ .17	42 ⁰⁸ .08	54 ³ .3	2	
28	33 ¹⁵ .65	40 ² .5	5	56 ¹⁶ .36	50 ⁹ .3	3	40 ²⁵ .60	84 ⁷ .12	41 ¹⁴ .96	54 ⁵ .5	4	
Oct. 8	33 ¹⁶ .50	40 ⁷ .5	5	56 ¹⁷ .20	51 ² .0	0	40 ²⁶ .35	85 ⁹ .8	41 ¹⁵ .82	54 ⁹ .9	4	
18	33 ¹⁷ .34	41 ² .5	5	56 ¹⁶ .03	51 ² .3	3	40 ²⁷ .09	86 ⁷ .3	41 ¹⁶ .67	55 ³ .3	5	
28	33 ¹⁶ .17	41 ⁷ .5	5	55 ¹⁶ .87	50 ⁹ .5	5	39 ²⁷ .82	87 ⁰ .2	41 ¹⁵ .51	55 ⁸ .8	5	
Nov. 7	33 ¹³ .01	42 ² .4	4	55 ¹⁴ .71	50 ⁴ .8	8	39 ²⁶ .55	86 ⁸ .6	41 ¹⁴ .36	56 ³ .3	5	
17	32 ¹¹ .88	42 ⁶ .3	3	55 ¹² .57	49 ⁶ .10	10	39 ²³ .29	86 ² .12	41 ¹¹ .22	56 ⁸ .8	6	
27	32 ⁸ .77	42 ⁹ .3	3	55 ¹⁰ .45	48 ⁶ .13	13	39 ²⁰ .06	85 ⁰ .17	41 ⁹ .11	57 ⁴ .4	6	
Dec. 7	32 ⁵ .69	43 ² .2	2	55 ⁶ .35	47 ³ .14	14	38 ¹⁶ .86	83 ³ .21	41 ⁵ .02	58 ⁰ .0	6	
17	32 ⁰ .64	43 ⁴ .2	2	55 ³ .29	45 ⁹ .16	16	38 ¹² .70	81 ² .25	40 ³ .97	58 ⁶ .6	6	
27	32 ³ .64	43 ⁶ .1	1	55 ⁰ .26	44 ³ .16	16	38 ⁸ .58	78 ⁷ .28	40 ¹ .94	59 ² .2	5	
37	32 ³ .67	43 ⁷ .1	1	55 ⁰ .26	42 ⁷ .16	16	38 ⁵ .50	75 ⁹ .28	40 ⁰ .95	59 ⁷ .7	5	

APPARENT PLACES OF STARS, 1889. 359

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	32 Vulpeculæ.			θ Capricorni.			61 Cygni.			ζ Cygni.		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s 20 49	[°] ['] ["] 27 37		^h ^m ^s 20 59	[°] ['] ["] 17 40		^h ^m ^s 21 1	[°] ['] ["] 38 11		^h ^m ^s 21 8	[°] ['] ["] 29 46	
Jan. 1	47.72	70.9		40.13	30.7		53.13	77.9		10.72	21.1	
11	47.70	68.6	23	40.14	30.7	0	53.08	75.4	25	10.67	18.8	23
21	47.72	66.2	24	40.18	30.7	0	53.07	72.8	26	10.67	16.4	24
31	47.78	63.5	27	{40.18}	{30.7}	2	53.11	70.1	27	10.70	14.0	24
Feb. 10	47.87	61.2	23	40.38	30.2	3	53.20	67.1	30	10.78	11.4	26
20	48.00	59.1	21	40.53	29.8	4	53.33	64.7	24	10.89	9.2	22
Mar. 2	48.17	57.3	18	40.70	29.2	6	53.50	62.5	22	11.04	7.2	20
12	48.37	55.9	14	40.91	28.4	8	53.71	60.7	18	11.23	5.6	16
Apr. 22	48.61	54.8	11	41.14	27.5	9	53.96	59.3	14	11.45	4.5	11
1	48.87	54.3	5	41.39	26.4	11	54.25	58.5	8	11.70	3.8	7
11	49.16	54.3	0	41.67	25.3	11	54.56	58.1	4	11.98	3.6	2
21	49.46	54.7	4	41.97	24.0	13	54.89	58.3	2	12.28	3.9	3
May 31	49.77	55.6	9	42.28	22.5	15	55.24	59.1	8	12.59	4.7	8
11	50.09	57.0	14	42.60	21.1	14	55.60	60.4	13	12.92	5.9	12
21	50.40	58.8	18	42.92	19.8	13	55.95	62.2	18	13.24	7.6	17
31	50.71	60.9	21	43.24	18.4	14	56.29	64.4	22	13.56	9.7	21
June 10	51.00	63.3	24	43.54	17.1	13	56.61	66.9	25	13.86	12.0	23
20	51.26	65.9	26	43.83	16.0	11	56.90	69.8	29	14.14	14.6	26
30	51.49	68.6	27	44.09	15.0	10	57.16	72.8	30	14.38	17.4	28
July 10	51.68	71.4	28	44.32	14.2	8	57.38	76.0	32	14.59	20.2	28
20	51.82	74.2	28	44.51	13.7	5	57.55	79.2	32	14.75	23.0	28
30	51.92	76.9	27	44.65	13.3	4	57.66	82.4	32	14.87	25.8	28
Aug. 9	51.97	79.4	25	44.74	13.2	1	57.73	85.5	31	14.94	28.6	28
19	51.98	81.8	24	44.79	13.2	0	57.74	88.4	29	14.96	31.1	25
Sept. 29	51.94	84.0	22	44.79	13.4	2	57.70	91.1	27	14.94	33.4	23
8	51.85	85.8	18	44.75	13.8	4	57.61	93.5	24	14.87	35.5	21
18	51.73	87.4	16	44.67	14.3	5	57.49	95.7	22	14.76	37.2	17
28	51.58	88.7	13	44.55	14.8	5	57.33	97.5	18	14.62	38.7	15
Oct. 8	51.41	89.6	9	44.42	15.4	6	57.14	98.9	14	14.45	39.8	11
18	51.22	90.1	5	44.27	16.0	6	56.93	99.8	9	14.27	40.5	7
28	51.02	90.2	1	44.11	16.6	6	56.72	100.4	6	14.07	40.8	3
Nov. 7	50.83	89.9	3	43.96	17.2	6	56.50	100.4	0	13.88	40.7	1
17	50.65	89.2	7	43.81	17.7	5	56.29	100.0	4	13.70	40.2	5
27	50.49	88.2	10	43.69	18.1	4	56.10	99.2	8	13.53	39.3	9
Dec. 7	50.36	86.8	14	43.59	18.5	4	55.93	97.9	13	13.38	38.0	13
17	50.25	85.0	18	43.52	18.8	3	55.79	96.2	17	13.25	36.3	17
27	50.17	83.0	20	43.49	19.0	2	55.68	94.1	21	13.16	34.4	19
37	50.13	80.8	22	43.48	19.1	1	55.61	91.8	23	13.10	32.2	22

360 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Cephei.			β Aquarii.			β Cephei.			ϵ Pegasi.		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h 21	^m 15	[°] 62	^h 21	^m 25	[°] 6	^h 21	^m 27	[°] 70	^h 21	^m 38	[°] 9
Jan. 1	53°39	63°0	40°84	38°3	10°78	33°3	42°21	56°7				
11	53°18	60°2	40°83	39°0	10°42	30°6	42°17	55°3				
21	53°03	57°1	40°84	39°6	10°15	27°6	42°17	53°9				
31	52°97	53°9	40°88	40°1	9°99	24°4	42°19	52°6				
Feb. 10	52°99	50°3	40°97	40°5	9°95	20°7	{42°21}	{56°7}				
20	53°10	47°0	41°08	40°7	10°03	17°4	42°33	50°1				
Mar. 2	53°28	44°0	41°22	40°7	10°22	14°2	42°45	49°3				
12	53°55	41°3	41°39	40°4	10°53	11°3	42°61	48°7				
22	53°89	39°1	41°59	39°9	10°94	8°9	42°79	48°4				
Apr. 1	54°28	37°4	41°81	39°2	11°44	6°9	43°00	48°4				
11	54°72	36°3	42°06	38°3	12°01	5°5	43°24	48°8				
21	55°21	35°7	42°34	37°1	12°63	4°7	43°51	49°6				
May 1	55°72	35°8	42°63	35°7	13°29	4°5	43°80	50°7				
11	56°23	36°5	42°93	34°2	13°97	4°9	44°10	52°1				
21	56°74	37°8	43°24	32°6	14°63	5°9	44°40	53°7				
31	57°23	39°7	43°55	30°9	15°27	7°6	44°71	55°6				
June 10	57°68	42°0	43°85	29°2	15°86	9°7	45°01	57°6				
20	58°08	44°7	44°14	27°5	16°39	12°2	45°29	59°7				
30	58°43	47°8	44°40	25°9	16°85	15°1	45°55	61°9				
July 10	58°71	51°1	44°63	24°5	17°21	18°4	45°78	64°0				
20	58°91	54°6	44°83	23°2	17°48	21°9	45°98	66°1				
30	59°04	58°2	44°98	22°1	17°64	25°5	46°14	68°1				
Aug. 9	59°08	61°8	45°09	21°2	17°70	29°1	46°26	69°9				
19	59°04	65°3	45°16	20°5	17°65	32°7	46°33	71°5				
29	58°93	68°6	45°18	20°0	17°49	36°3	46°35	72°9				
Sept. 8	58°74	71°8	45°16	19°7	17°24	39°6	46°33	74°0				
18	58°48	74°6	45°10	19°6	16°89	42°7	46°28	74°9				
28	58°17	77°1	45°01	19°7	16°46	45°5	46°20	75°6				
Oct. 8	57°81	79°2	44°89	19°9	15°97	47°9	46°08	76°1				
18	57°41	80°9	44°76	20°2	15°42	49°8	45°95	76°3				
28	56°99	82°0	44°62	20°7	14°83	51°2	45°81	76°2				
Nov. 7	56°56	82°6	44°48	21°2	14°21	52°1	45°66	76°0				
17	56°12	82°6	44°34	21°8	13°58	52°5	45°52	75°5				
27	55°70	82°1	44°21	22°5	12°97	52°2	45°39	74°8				
Dec. 7	55°31	81°0	44°11	23°1	12°38	51°4	45°27	73°9				
17	54°96	79°3	44°03	23°8	11°83	50°0	45°17	72°8				
27	54°65	77°1	43°97	24°5	11°34	48°0	45°10	71°6				
37	54°40	74°5	43°95	25°2	10°93	45°6	45°05	70°3				

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	16 Pegasi.			α Aquarii.			α Gruis.			θ Aquarii.		
	R. A.	Dec. N.		R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. S.	
	^h 21	^m 47	[°] 25	^h 22	^m 0	[°] 51	^h 22	^m 1	[°] 47	^h 22	^m 10	[°] 8
Jan. 1	58 ^s .92	72 ^s .6	19	3 ^s .05	36 ^s .7	9	11 ^s .29	8	60 ^s .3	56 ^s .68	75 ^s .9	5
11	58 ^s .85	70 ^s .7	19	3 ^s .01	37 ^s .6	8	11 ^s .21	8	68 ^s .0	56 ^s .63	76 ^s .4	4
21	58 ^s .81	68 ^s .7	20	2 ^s .99	38 ^s .4	7	11 ^s .17	4	66 ^s .3	56 ^s .60	76 ^s .8	3
31	58 ^s .81	66 ^s .6	21	2 ^s .99	39 ^s .1	7	11 ^s .18	1	64 ^s .3	56 ^s .60	77 ^s .1	3
Feb. 10	58 ^s .84	64 ^s .5	21	3 ^s .03	39 ^s .7	6	11 ^s .23	5	62 ^s .2	56 ^s .63	77 ^s .3	2
20	58 ^s .91	62 ^s .3	22	3 ^s .11	40 ^s .2	5	11 ^s .33	10	59 ^s .6	56 ^s .70	77 ^s .2	1
Mar. 2	59 ^s .02	60 ^s .6	17	3 ^s .21	40 ^s .5	3	11 ^s .48	15	57 ^s .1	56 ^s .80	77 ^s .0	2
12	59 ^s .16	59 ^s .2	14	3 ^s .34	40 ^s .5	0	11 ^s .68	20	54 ^s .6	56 ^s .93	76 ^s .5	5
Apr. 22	59 ^s .34	58 ^s .1	11	3 ^s .51	40 ^s .2	3	11 ^s .91	23	52 ^s .1	57 ^s .09	75 ^s .8	7
1	59 ^s .56	57 ^s .4	7	3 ^s .71	39 ^s .7	5	12 ^s .19	28	49 ^s .6	57 ^s .28	74 ^s .9	9
11	59 ^s .81	57 ^s .2	2	3 ^s .71	38 ^s .9	8	12 ^s .51	32	47 ^s .2	57 ^s .50	73 ^s .8	11
21	60 ^s .08	57 ^s .4	2	4 ^s .19	37 ^s .8	11	12 ^s .87	36	44 ^s .9	57 ^s .75	72 ^s .5	13
May 30	60 ^s .38	58 ^s .0	6			13		38				16
11	60 ^s .70	59 ^s .1	11	4 ^s .47	36 ^s .5	16	13 ^s .25	41	42 ^s .9	58 ^s .03	70 ^s .9	16
21	61 ^s .02	60 ^s .6	15	4 ^s .76	34 ^s .9	17	13 ^s .66	43	41 ^s .0	58 ^s .32	69 ^s .3	18
31	61 ^s .34	62 ^s .5	19	5 ^s .07	33 ^s .2	17	14 ^s .09	43	39 ^s .4	58 ^s .63	67 ^s .5	18
June 10	61 ^s .65	64 ^s .7	22	5 ^s .38	31 ^s .4	18	14 ^s .52	43	38 ^s .2	58 ^s .95	65 ^s .7	18
20	61 ^s .95	67 ^s .1	24			19		43				18
30	62 ^s .22	69 ^s .6	25	5 ^s .68	29 ^s .5	19	14 ^s .95	42	37 ^s .3	59 ^s .26	63 ^s .9	18
July 10	62 ^s .46	72 ^s .3	27	5 ^s .98	27 ^s .6	18	15 ^s .37	39	36 ^s .8	59 ^s .56	62 ^s .1	16
20	62 ^s .67	75 ^s .0	27	6 ^s .26	25 ^s .8	18	15 ^s .76	35	36 ^s .6	59 ^s .85	60 ^s .5	15
30	62 ^s .83	77 ^s .6	26	6 ^s .51	24 ^s .0	18	16 ^s .11	35	36 ^s .9	60 ^s .12	59 ^s .0	14
Aug. 9	62 ^s .94	80 ^s .2	26			17		32				14
19	63 ^s .01	82 ^s .7	25	6 ^s .73	22 ^s .3	14	16 ^s .43	26	37 ^s .5	60 ^s .35	57 ^s .6	11
29	63 ^s .04	85 ^s .0	23	6 ^s .91	20 ^s .9	13	16 ^s .69	21	38 ^s .5	60 ^s .55	56 ^s .5	9
8	63 ^s .02	87 ^s .0	20	7 ^s .05	19 ^s .6	11	16 ^s .90	14	39 ^s .8	60 ^s .70	55 ^s .6	7
18	62 ^s .96	88 ^s .7	17	7 ^s .14	18 ^s .5	9	17 ^s .04	8	41 ^s .4	60 ^s .81	54 ^s .9	4
28	62 ^s .86	90 ^s .2	15			6		18				4
Oct. 8	62 ^s .74	91 ^s .4	8	7 ^s .20	17 ^s .6	6	17 ^s .12	1	43 ^s .2	60 ^s .88	54 ^s .5	2
18	62 ^s .59	92 ^s .2	8	7 ^s .21	17 ^s .0	4	17 ^s .13	1	45 ^s .1	60 ^s .90	54 ^s .3	2
28	62 ^s .43	92 ^s .7	5	7 ^s .18	16 ^s .6	4	17 ^s .08	5	47 ^s .1	60 ^s .89	54 ^s .3	2
Nov. 7	62 ^s .26	92 ^s .8	1	7 ^s .11	16 ^s .4	2	16 ^s .98	10	49 ^s .0	60 ^s .84	54 ^s .5	2
17	62 ^s .10	92 ^s .6	6			9		15				3
27	61 ^s .94	92 ^s .0	6	7 ^s .02	16 ^s .4	1	16 ^s .83	18	50 ^s .8	60 ^s .75	54 ^s .8	5
Dec. 7	61 ^s .79	91 ^s .1	9	6 ^s .91	16 ^s .5	1	16 ^s .65	17	52 ^s .5	60 ^s .65	55 ^s .3	5
17	61 ^s .66	89 ^s .8	13	6 ^s .78	16 ^s .8	3	16 ^s .44	21	53 ^s .9	60 ^s .53	55 ^s .8	6
27	61 ^s .55	88 ^s .3	18	6 ^s .65	17 ^s .3	6	16 ^s .22	22	55 ^s .0	60 ^s .39	56 ^s .4	7
37	61 ^s .47	86 ^s .5	18			8		23				7
				6 ^s .52	17 ^s .9	6	15 ^s .99	22	55 ^s .7	60 ^s .26	57 ^s .1	7
				6 ^s .39	18 ^s .5	7	15 ^s .77	20	56 ^s .0	60 ^s .14	57 ^s .8	6
				6 ^s .27	19 ^s .2	8	15 ^s .57	16	56 ^s .0	60 ^s .02	58 ^s .4	7
				6 ^s .17	20 ^s .0	9	15 ^s .41	14	55 ^s .5	59 ^s .92	59 ^s .1	6
						8		9				5
				6 ^s .09	20 ^s .9	8	15 ^s .27	11	54 ^s .6	59 ^s .84	59 ^s .7	5
				6 ^s .04	21 ^s .7	8	15 ^s .16	11	53 ^s .4	59 ^s .78	60 ^s .2	5

362 APPARENT PLACES OF STARS, 1889.

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♌ Aquarii.			♍ Aquarii.			♎ Pegasi.			♏ Aquarii.		
	R. A.	Dec. S.		R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. S.	
	h m	° ' "		h m	° ' "		h m	° ' "		h m	° ' "	
	22 15	1 56		22 29	0 41		22 35	10 14		22 46	8 9	
Jan. 1	53° 57'	52° 3'	8	37° 40'	27° 1'	8	53° 89'	64° 8'	12	47° 61'	80° 9'	5
11	53° 51'	53° 1'	7	37° 33'	27° 9'	8	53° 81'	63° 6'	12	47° 53'	81° 4'	4
21	53° 48'	53° 8'	6	37° 29'	28° 7'	7	53° 75'	62° 4'	12	47° 48'	81° 8'	3
31	53° 48'	54° 4'		37° 27'	29° 4'	6	53° 72'	61° 2'	12	47° 45'	82° 1'	1
Feb. 10	53° 50'	54° 9'	4	37° 28'	30° 0'	4	53° 72'	60° 0'	10	47° 44'	82° 2'	1
20	53° 56'	55° 3'	2	37° 32'	30° 4'	2	53° 74'	59° 0'	9	47° 46'	82° 1'	3
Mar. 2	53° 64'	55° 5'	1	37° 39'	30° 6'	0	53° 81'	58° 1'	7	47° 52'	81° 8'	5
12	53° 76'	55° 4'		37° 50'	30° 6'	0	53° 90'	57° 4'	7	47° 61'	81° 3'	8
22	53° 91'	55° 0'	6	37° 64'	30° 3'	6	54° 03'	57° 1'	0	47° 74'	80° 5'	10
Apr. 1	54° 10'	54° 4'	9	37° 81'	29° 7'	8	54° 20'	57° 1'	3	47° 90'	79° 5'	12
11	54° 32'	53° 5'	11	38° 01'	28° 9'	11	54° 40'	57° 4'	6	48° 09'	78° 3'	14
21	54° 56'	52° 4'		38° 25'	27° 8'	13	54° 64'	58° 0'	10	48° 32'	76° 9'	16
May 1	54° 83'	51° 0'	16	38° 51'	26° 5'	16	54° 90'	59° 0'	13	48° 58'	75° 3'	18
11	55° 12'	49° 4'	17	38° 80'	24° 9'	17	55° 19'	60° 3'	15	48° 86'	73° 5'	18
21	55° 43'	47° 7'	18	39° 10'	23° 2'	19	55° 49'	61° 8'	18	49° 16'	71° 7'	19
31	55° 74'	45° 9'		39° 41'	21° 3'	19	55° 80'	63° 6'	20	49° 47'	69° 8'	19
June 10	56° 05'	44° 0'	19	39° 72'	19° 4'	20	56° 11'	65° 6'	21	49° 79'	67° 9'	19
20	56° 35'	42° 1'	19	40° 03'	17° 4'	19	56° 42'	67° 7'	22	50° 10'	66° 0'	18
30	56° 64'	40° 2'	17	40° 32'	15° 5'	18	56° 71'	69° 9'	22	50° 40'	64° 2'	16
July 10	56° 90'	38° 5'		40° 59'	13° 7'	17	56° 98'	72° 1'	22	50° 68'	62° 6'	15
20	57° 13'	36° 8'	15	40° 83'	12° 0'	16	57° 22'	74° 3'	20	50° 94'	61° 1'	13
30	57° 33'	35° 3'	12	41° 04'	10° 4'	14	57° 43'	76° 3'	19	51° 16'	59° 8'	10
Aug. 9	57° 48'	34° 1'	11	41° 20'	9° 0'	11	57° 59'	78° 2'	18	51° 35'	58° 8'	7
19	57° 59'	33° 0'	8	41° 33'	7° 9'	9	57° 72'	80° 0'	16	51° 50'	58° 1'	5
29	57° 66'	32° 2'	6	41° 41'	7° 0'	7	57° 80'	81° 6'	13	51° 60'	57° 6'	3
Sept. 8	57° 69'	31° 6'	4	41° 45°	6° 3'	5	57° 84'	82° 9'	11	51° 66'	57° 3'	0
18	57° 68'	31° 2'	1	41° 45'	5° 8'	2	57° 84'	84° 0'	8	51° 67'	57° 3'	2
28	57° 63'	31° 1'	0	41° 41'	5° 6'	0	57° 81'	84° 8'	6	51° 65'	57° 5'	3
Oct. 8	57° 55'	31° 1'	2	41° 34'	5° 6'	1	57° 74'	85° 4'	4	51° 60'	57° 8'	5
18	57° 45'	31° 3'	4	41° 25'	5° 7'	3	57° 65'	85° 8'	2	51° 52'	58° 3'	6
28	57° 33'	31° 7'	5	41° 14'	6° 0'	4	57° 54'	86° 0'	1	51° 42'	58° 9'	6
Nov. 7	57° 20'	32° 2'	5	41° 02'	6° 4'	6	57° 42'	85° 9'	3	51° 31'	59° 5'	7
17	57° 07'	32° 7'	6	40° 89'	7° 0'	6	57° 29'	85° 6'	5	51° 18'	60° 2'	7
27	56° 95'	33° 3'	7	40° 77'	7° 6'	7	57° 16'	85° 1'	7	51° 06'	60° 9'	7
Dec. 7	56° 83'	34° 0'	8	40° 65'	8° 3'	8	57° 04'	84° 4'	8	50° 94'	61° 6'	7
17	56° 73'	34° 8'	8	40° 54'	9° 1'	8	56° 92'	83° 6'	10	50° 83'	62° 3'	6
27	56° 64'	35° 6'	8	40° 45'	9° 9'	8	56° 82'	82° 6'	11	50° 73'	62° 9'	6
37	56° 58'	36° 4'		40° 38'	10° 7'	8	56° 74'	81° 5'	11	50° 66'	63° 5'	6

APPARENT PLACES OF STARS, 1889. 363

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	α Piscis Australis. (Fomalhaut)			α Pegasi. (Markab)			γ Piscium.			κ Piscium.		
	R. A.	Dec. S.		R. A.	Dec. N.		R. A.	Dec. N.		R. A.	Dec. N.	
	^h ^m ^s 22 51	^o ['] ["] 30 12		^h ^m ^s 22 59	^o ['] ["] 14 36		^h ^m ^s 23 11	^o ['] ["] 2 40		^h ^m ^s 23 21	^o ['] ["] 0 38	
Jan. 1	29° 02' 10"	52° 8' 4"		12° 41' 9"	27° 5' 12"		23° 13' 9"	26° 7' 8"		13° 09' 9"	46° 1' 8"	
11	28° 92' 6"	52° 4' 7"		12° 32' 8"	26° 3' 13"		23° 04' 7"	25° 9' 8"		13° 00' 8"	45° 3' 7"	
21	28° 86' 4"	51° 7' 9"		12° 24' 6"	25° 0' 13"		22° 97' 6"	25° 1' 8"		12° 92' 6"	44° 6' 7"	
31	28° 82' 1"	50° 8' 11"		12° 18' 3"	23° 7' 13"		22° 91' 3"	24° 3' 7"		12° 86' 4"	43° 9' 5"	
Feb. 10	28° 81' 2"	49° 7' 14"		12° 15' 0"	22° 4' 12"		22° 88' 0"	23° 6' 5"		12° 82' 1"	43° 4' 4"	
20	28° 83' 6"	48° 3' 18"		12° 15' 3"	21° 2' 11"		22° 88' 3"	23° 1' 4"		12° 81' 1"	43° 0' 3"	
Mar. 2	28° 89' 10"	46° 5' 18"		12° 18' 8"	20° 1' 9"		22° 91' 7"	22° 7' 1"		12° 82' 5"	42° 7' 0"	
12	28° 99' 14"	44° 7' 20"		12° 26' 11"	19° 2' 6"		22° 98' 10"	22° 6' 1"		12° 87' 9"	42° 7' 3"	
Apr. 22	29° 13' 17"	42° 7' 21"		12° 37' 15"	18° 6' 3"		23° 08' 13"	22° 7' 4"		12° 96' 13"	43° 0' 5"	
1	29° 30' 21"	40° 6' 22"		12° 52' 18"	18° 3' 0"		23° 21' 17"	23° 1' 7"		13° 09' 16"	43° 5' 8"	
11	29° 51' 25"	38° 4' 23"		12° 70' 22"	18° 3' 4"		23° 38' 21"	23° 8' 9"		13° 25' 20"	44° 3' 10"	
21	29° 76' 28"	36° 1' 22"		12° 92' 25"	18° 7' 8"		23° 59' 24"	24° 7' 12"		13° 45' 23"	45° 3' 13"	
May 1	30° 04' 31"	33° 9' 22"		13° 17' 28"	19° 5' 11"		23° 83' 26"	25° 9' 15"		13° 68' 26"	46° 6' 15"	
11	30° 35' 33"	31° 7' 21"		13° 45' 30"	20° 6' 14"		24° 09' 29"	27° 4' 17"		13° 94' 29"	48° 1' 18"	
21	30° 68' 35"	29° 6' 19"		13° 75' 31"	22° 0' 17"		24° 38' 31"	29° 1' 18"		14° 23' 30"	49° 9' 18"	
31	31° 03' 36"	27° 7' 18"		14° 06' 32"	23° 7' 19"		24° 69' 32"	30° 9' 20"		14° 53' 31"	51° 7' 20"	
June 10	31° 39' 35"	25° 9' 15"		14° 38' 31"	25° 6' 21"		25° 01' 31"	32° 9' 20"		14° 84' 31"	53° 7' 20"	
20	31° 74' 34"	24° 4' 11"		14° 69' 30"	27° 7' 22"		25° 32' 31"	34° 9' 21"		15° 15' 31"	55° 7' 20"	
30	32° 08' 32"	23° 3' 9"		14° 99' 29"	29° 9' 23"		25° 63' 29"	37° 0' 20"		15° 46' 30"	57° 7' 20"	
July 10	32° 40' 30"	22° 4' 5"		15° 28' 26"	32° 2' 23"		25° 92' 26"	39° 0' 19"		15° 76' 27"	59° 7' 19"	
20	32° 70' 26"	21° 9' 2"		15° 54' 22"	34° 5' 23"		26° 18' 24"	40° 9' 18"		16° 03' 24"	61° 6' 17"	
30	32° 96' 22"	21° 7' 1"		15° 76' 19"	36° 8' 21"		26° 42' 20"	42° 7' 16"		16° 27' 21"	63° 3' 15"	
Aug. 9	33° 18' 17"	21° 8' 5"		15° 95' 15"	38° 9' 20"		26° 62' 16"	44° 3' 14"		16° 48' 17"	64° 8' 13"	
19	33° 35' 12"	22° 3' 8"		16° 10' 11"	40° 9' 18"		26° 78' 12"	45° 7' 11"		16° 65' 13"	66° 1' 11"	
Sept. 29	33° 47' 7"	23° 1' 10"		16° 21' 6"	42° 7' 16"		26° 90' 9"	46° 8' 10"		16° 78' 9"	67° 2' 8"	
8	33° 54' 3"	24° 1' 12"		16° 27' 2"	44° 3' 14"		26° 99' 4"	47° 8' 7"		16° 87' 5"	68° 0' 6"	
18	33° 57' 2"	25° 3' 14"		16° 29' 2"	45° 7' 11"		27° 03' 0"	48° 5' 5"		16° 92' 1"	68° 6' 3"	
28	33° 55' 6"	26° 7' 15"		16° 27' 4"	46° 8' 9"		27° 03' 3"	49° 0' 2"		16° 93' 2"	68° 9' 2"	
Oct. 8	33° 49' 10"	28° 2' 14"		16° 23' 7"	47° 7' 7"		27° 00' 6"	49° 2' 1"		16° 91' 5"	69° 1' 1"	
18	33° 39' 12"	29° 6' 14"		16° 16' 10"	48° 4' 4"		26° 94' 8"	49° 3' 2"		16° 86' 7"	69° 0' 2"	
28	33° 27' 13"	31° 0' 12"		16° 06' 11"	48° 8' 1"		26° 86' 10"	49° 1' 3"		16° 79' 9"	68° 8' 4"	
Nov. 7	33° 14' 15"	32° 2' 11"		15° 95' 13"	48° 9' 1"		26° 76' 10"	48° 8' 4"		16° 70' 10"	68° 4' 5"	
17	32° 99' 15"	33° 3' 9"		15° 82' 12"	48° 8' 3"		26° 66' 12"	48° 4' 6"		16° 60' 12"	67° 9' 6"	
27	32° 84' 15"	34° 2' 6"		15° 70' 13"	48° 5' 5"		26° 54' 11"	47° 8' 6"		16° 48' 11"	67° 3' 7"	
Dec. 7	32° 69' 13"	34° 8' 3"		15° 57' 12"	48° 0' 8"		26° 43' 11"	47° 2' 7"		16° 37' 11"	66° 6' 7"	
17	32° 56' 12"	35° 1' 1"		15° 45' 11"	47° 2' 10"		26° 32' 11"	46° 5' 8"		16° 26' 11"	65° 9' 7"	
27	32° 44' 10"	35° 2' 2"		15° 34' 11"	46° 2' 11"		26° 21' 9"	45° 7' 8"		16° 15' 10"	65° 2' 8"	
37	32° 34' 10"	35° 0' 2"		15° 23' 11"	45° 1' 11"		26° 12' 9"	44° 9' 8"		16° 05' 10"	64° 4' 8"	

AT UPPER TRANSIT AT GREENWICH.

Month and Day.	♈ Piscium.				♉ Cephei.				♊ Sculptoris.				♋ Piscium.			
	R. A.		Dec. N.		R. A.		Dec. N.		R. A.		Dec. S.		R. A.		Dec. N.	
	h	m	°	'	h	m	°	'	h	m	°	'	h	m	°	'
	23	34	5	1	23	34	77	0	23	43	28	44	23	53	6	14
Jan. 1	13.14	10	23.2	9	46.25	87	59.3	10	7.12	12	55.1	1	35.46	11	49.9	9
11	13.04	9	22.3	9	45.38	81	58.3	16	7.00	11	55.0	3	35.35	10	49.0	8
21	12.95	8	21.4	8	44.57	71	56.7	21	6.89	9	54.7	7	35.25	9	48.2	8
31	12.87	5	20.6	7	43.86	59	54.6	25	6.80	6	54.0	10	35.16	7	47.4	8
Feb. 10	12.82	2	19.9	6	43.27	45	52.1	29	6.74	4	53.0	13	35.09	4	46.6	7
20	12.80	0	19.3	5	42.82	28	49.2	31	6.70	1	51.7	15	35.05	2	45.9	5
Mar. 2	12.80	3	18.8	3	42.54	10	46.1	31	6.69	3	50.2	18	35.03	2	45.4	3
12	{12.82}	7	18.5	0	{42.54}	10	{46.1}	31	6.72	8	48.4	22	35.05	6	45.1	1
22	12.91	12	18.5	2	42.54	28	39.6	29	6.80	11	46.2	21	35.11	9	45.0	2
Apr. 1	13.03	15	18.7	5	42.82	45	36.7	26	6.91	16	44.1	23	35.20	13	45.2	5
11	13.18	19	19.2	8	43.27	61	34.1	23	7.07	19	41.8	25	35.33	17	45.7	7
21	13.37	22	20.0	11	43.88	74	31.8	18	7.26	23	39.3	24	35.50	21	46.4	10
May 1	13.59	25	21.1	14	44.62	85	30.0	12	7.49	27	36.9	25	35.71	25	47.4	13
11	13.84	29	22.5	16	45.47	93	28.8	7	7.76	30	34.4	24	35.96	27	48.7	15
21	14.13	30	24.1	17	46.40	98	28.1	1	8.06	33	32.0	23	36.23	29	50.2	18
31	14.43	31	25.8	20	47.38	99	28.0	5	8.39	34	29.7	21	36.52	31	52.0	19
June 10	14.74	31	27.8	20	48.37	99	28.5	11	8.73	35	27.6	19	36.83	31	53.9	20
20	15.05	31	29.8	20	49.36	95	29.6	16	9.08	34	25.7	16	37.14	31	55.9	21
30	15.36	30	31.8	21	50.31	89	31.2	21	9.42	34	24.1	13	37.45	31	58.0	21
July 10	15.66	28	33.9	20	51.20	81	33.3	25	9.76	32	22.8	10	37.76	29	60.1	20
20	15.94	25	35.9	19	52.01	71	35.8	29	10.08	29	21.8	6	38.05	26	62.1	19
30	16.19	22	37.8	17	52.72	59	38.7	32	10.37	25	21.2	2	38.31	23	64.0	18
Aug. 9	16.41	18	39.5	15	53.31	45	41.9	35	10.62	22	21.0	2	38.54	20	65.8	16
19	16.59	14	41.0	13	53.76	32	45.4	37	10.84	17	21.2	5	38.74	16	67.4	14
29	16.73	10	42.3	11	54.08	18	49.1	38	11.01	13	21.7	9	38.90	12	68.8	12
Sept. 8	16.83	6	43.4	9	54.26	3	52.9	38	11.14	8	22.6	11	39.02	8	70.0	9
18	16.89	3	44.3	6	54.29	3	56.7	37	11.22	4	23.7	13	39.10	5	70.9	7
28	16.92	1	44.9	4	54.18	25	60.4	35	11.26	1	25.0	15	39.15	1	71.6	5
Oct. 8	16.91	3	45.3	1	53.93	39	63.9	34	11.25	4	26.5	16	39.16	2	72.1	3
18	16.88	7	45.4	0	53.54	51	67.3	31	11.21	8	28.1	16	39.14	5	72.4	0
28	16.81	8	45.4	2	53.03	62	70.4	27	11.13	10	29.7	15	39.09	7	72.4	1
Nov. 7	16.73	10	45.2	3	52.41	71	73.1	23	11.03	12	31.2	14	39.02	8	72.3	3
17	16.63	11	44.9	5	51.69	80	75.4	17	10.91	13	32.6	12	38.94	10	72.0	4
27	16.52	11	44.4	6	50.89	87	77.1	12	10.78	14	33.8	9	38.84	11	71.6	5
Dec. 7	16.41	11	43.8	7	50.02	90	78.3	6	10.64	14	34.7	7	38.73	11	71.1	7
17	16.30	11	43.1	8	49.12	91	78.9	1	10.50	13	35.4	4	38.62	11	70.4	7
27	16.19	10	42.3	8	48.21	89	78.8	6	10.37	13	35.8	1	38.51	11	69.7	8
37	16.09	10	41.5	8	47.32	89	78.2	6	10.24	13	35.9	1	38.40	11	68.9	8

MOON-CULMINATING STARS, 1889. 365

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of R.A. for foll. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
Jan. 0	Moon III.L.	-	17 52 38.70		168.12	74.81	8. 21 20 59.7	- 234.8	16 38.5	60 58.1
	Moon II.V.	29.1	18 26 22.96		168.99	75.00	21 55 13.2	- 106.7	16 36.9	60 52.4
1	Moon I.L.	-	18 57 38.62		168.35	74.85	8. 22 33 40.0	+ 23.1	16 34.0	60 41.8
2	Moon I.V.	0.7	19 31 7.35		166.18	74.34	8. 21 46 13.4	+ 149.3	16 29.9	60 26.6
	Moon I.L.	-	20 4 1.65		162.66	73.52	21 4 23.6	+ 267.2	16 24.6	60 7.3
3	Moon I.V.	1.7	20 36 7.14		158.11	72.46	8. 20 0 7.1	+ 373.2	16 18.4	59 44.6
	Moon I.L.	-	21 7 13.66		152.90	71.23	18 36 2.2	+ 465.0	16 11.4	59 19.0
4	Moon I.V.	2.7	21 37 15.48		147.39	69.91	8. 16 55 6.4	+ 541.7	16 3.9	58 51.3
	Moon I.L.	-	22 6 11.03		141.90	68.58	15 0 21.9	+ 603.2	15 56.0	58 22.5
	Aquarii -	4	22 0 24.41	- .01			14 24			
	42 Aquarii -	6	22 10 49.24	- .01			13 23			
5	Moon I.V.	3.8	22 34 2.17		136.69	67.30	8. 12 54 45.6	+ 650.6	15 48.0	57 53.1
	Moon I.L.	-	23 0 53.34		131.93	66.11	10 41 0.1	+ 685.0	15 40.0	57 23.9
	70 Aquarii -	6	22 42 38.01	- .01			11 8			
	74 Aquarii -	6	22 47 36.30	- .01			12 12			
6	Moon I.V.	4.8	23 26 50.74		127.74	65.04	8. 8 21 31.8	+ 708.0	15 32.3	56 55.5
	Moon I.L.	-	23 52 1.62		124.19	64.13	5 58 28.6	+ 721.0	15 24.9	56 28.5
	B.A.C. 8274	6	23 42 48.01	- .01			7 0			
	30 Piscium -	5	23 56 14.70	- .01			6 38			
7	Moon I.V.	5.8	0 16 33.82		121.29	63.38	8. 3 33 41.9	+ 725.5	15 18.0	56 3.1
	Moon I.L.	-	0 40 35.32		119.07	62.79	1 8 47.8	+ 722.4	15 11.6	55 39.8
	20 Ceti -	5½	0 47 18.96	- .02			8. 1 45			
	26 Ceti -	6½	0 58 5.20	- .02			N. 0 46			
8	Moon I.V.	6.9	1 4 14.04		117.49	62.37	N. 1 14 49.0	+ 712.7	15 5.9	55 18.8
	Moon I.L.	-	1 27 37.67		116.55	62.12	3 35 53.3	+ 697.1	15 0.8	55 0.3
	B.A.C. 408 -	6½	1 16 57.46	- .01			4 9			
	Piscium -	4½	1 35 38.50	- .01			4 55			
9	Moon I.V.	7.9	1 50 53.58		116.20	62.02	N. 5 53 16.5	+ 675.9	14 56.5	54 44.4
	Moon I.L.	-	2 14 8.74		116.41	62.07	8 5 54.5	+ 649.5	14 52.9	54 31.3
	1 Ceti -	4½	2 7 6.35	- .01			8 20			
	2 Ceti -	4	2 22 14.93	- .01			7 58			
10	Moon I.V.	8.9	2 37 29.52		117.14	62.25	N. 10 12 44.1	+ 617.9	14 50.0	54 20.7
	Moon I.L.	-	3 1 1.84		118.22	62.55	12 12 43.2	+ 581.1	14 47.9	54 12.9
	B.A.C. 987 -	6½	3 5 15.99	- .01			12 38			
	0 Tauri -	3½	3 18 50.31	- .01			8 38			
11	Moon I.V.	10.0	3 24 50.83		119.91	62.95	N. 14 4 47.9	+ 538.8	14 46.4	54 7.6
	Moon I.L.	-	3 49 0.88		121.82	63.44	15 47 52.7	+ 491.1	14 45.7	54 4.8
	B.A.C. 1206	6	3 46 48.68	- .01			17 0			
	B.A.C. 1240	6	3 54 24.91	- .01			17 53			
12	Moon I.V.	11.0	4 13 35.40		123.97	63.97	N. 17 20 50.4	+ 437.6	14 45.5	54 4.3
	Moon I.L.	-	4 38 36.66		126.26	64.55	18 42 31.7	+ 378.3	14 46.0	54 6.0
	0 Tauri -	3½	4 22 8.11	- .01			18 56			
	B.A.C. 1468	6	4 39 47.92	- .01			N. 18 32			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for toll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			^h ^m ^s	^s	^s	^s	[°] ['] ["]	["]	['] ["]	['] ["]
Jan. 13	Moon I. v.	12.0	5 4 5.66		128.57	65.15	N. 19 51 47.4	+ 313.3	14 47.0	54 9.7
	Moon I. L.	-	5 30 1.99		130.79	65.66	20 47 30.2	+ 242.9	14 48.5	54 15.3
	B.A.C. 1835	6½	5 41 45.05	0.00			20 50			
	χ^1 Orionis	4½	5 47 48.83	0.00			20 15			
14	Moon I. v.	13.1	5 56 23.79		132.80	66.15	N. 21 28 37.2	+ 167.5	14 50.5	54 22.5
	Moon I. L.	-	6 23 7.81		134.47	66.55	21 54 12.9	+ 87.9	14 52.8	54 31.1
	μ Geminor.	3	6 16 15.13	0.00			22 34			
	15 Geminor.	6	6 21 9.91	0.00			20 51			
15	Moon I. v.	14.1	6 50 9.47		135.73	66.85	N. 22 3 33.4	+ 5.1	14 55.6	54 41.1
	Moon I. L.	-	7 17 23.32		136.50	67.03	21 56 7.6	- 79.6	14 58.5	54 52.0
	86 Geminor.	5½	7 15 24.63	+ 0.01			20 39			
	63 Geminor.	5½	7 21 9.50	+ 0.01			21 40			
16	Moon I. v.	15.1	7 44 43.40		136.76	67.08	N. 21 31 41.5	- 164.7	15 1.8	55 3.9
	η Cancri	6	8 26 17.80	+ 0.01			20 49			
	39 Cancri	6	8 33 43.74	+ 0.02			20 24			
17	Moon II. L.	-	8 14 17.66		136.51	67.02	N. 20 50 18.6	- 248.8	15 5.2	55 16.5
	Moon II. v.	16.2	8 41 32.09		135.83	66.86	19 52 20.6	- 330.3	15 8.9	55 29.9
	80 Cancri	6½	9 5 42.96	+ 0.02			18 30			
	83 Cancri	6	9 12 47.47	+ 0.02			18 10			
18	Moon II. L.	-	9 8 36.25		134.81	66.62	N. 18 38 26.6	- 407.9	15 12.7	55 43.7
	Moon II. v.	17.2	9 35 26.76		133.58	66.32	17 9 31.4	- 480.4	15 16.5	55 57.9
	42 Leonis	6	10 15 52.42	+ 0.02			15 32			
	B.A.C. 3579	6	10 22 52.94	+ 0.03			14 55			
19	Moon II. L.	-	10 2 1.76		132.25	66.01	N. 15 26 42.5	- 546.7	15 20.5	56 12.6
	Moon II. v.	18.2	10 28 20.94		130.97	65.70	13 31 18.9	- 606.1	15 24.6	56 27.5
	1 Leonis	5	10 43 25.50	+ 0.02			11 8			
	B.A.C. 3845	6	11 10 10.11	+ 0.03			13 27			
20	Moon II. L.	-	10 54 25.58		129.85	65.45	N. 11 24 47.2	- 657.9	15 28.8	56 42.8
	Moon II. v.	19.3	11 20 18.34		129.00	65.26	9 8 40.4	- 701.8	15 33.0	56 58.2
	η Virginis	4½	11 55 11.02	+ 0.02			7 14			
	11 Virginis	6	12 4 23.86	+ 0.03			6 25			
21	Moon II. L.	-	11 46 3.19		128.54	65.17	N. 6 44 36.4	- 737.4	15 37.3	57 14.0
	Moon II. v.	20.3	12 11 45.20		128.55	65.20	4 14 17.1	- 764.3	15 41.7	57 30.1
	B.A.C. 4254	6	12 32 42.67	+ 0.03			2 28			
	8 Virginis	3	12 50 0.47	+ 0.03			4 0			
22	Moon II. L.	-	12 37 30.37		129.08	65.36	N. 1 39 28.3	- 782.2	15 46.1	57 46.3
	Moon II. v.	21.3	13 3 25.31		130.18	65.67	S. 0 57 58.9	- 790.7	15 50.6	58 2.6
	80 Virginis	6	13 29 44.27	+ 0.03			4 50			
	B.A.C. 4572	6	13 38 6.71	+ 0.03			4 56			
23	Moon II. L.	-	13 29 37.17		131.90	66.13	S. 3 36 8.1	- 789.1	15 55.0	58 19.0
	Moon II. v.	22.4	13 56 13.31		134.23	66.74	6 12 55.2	- 776.9	15 59.5	58 35.3
	4 Virginis	4	14 10 10.91	+ 0.03			5 28			
	μ Virginis	4	14 37 11.69	+ 0.03			S. 5 11			

MOON-CULMINATING STARS, 1889. 367

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for fold. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			$^{\circ}$ $'$ $''$ $'''$	$''$	$''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$''$	$'$ $''$	$'$ $''$
Jan. 24	Moon II.L.	-	14 23 21.03		137.15	67.50	S. 8 46 7.8	- 753.2	16 3.9	58 51.3
	Moon II.U.	23.4	14 51 7.11		140.61	68.36	11 13 23.2	- 717.2	16 8.1	59 6.7
	7 Libræ - -	4½	15 29 17.85	+ .03			14 25			
	7 Libræ - -	6	15 37 48.65	+ .03			15 19			
25	Moon II.L.	-	15 19 37.48		144.51	69.32	S. 13 32 8.8	- 668.1	16 12.0	59 21.2
	Moon II.U.	24.4	15 48 56.41		148.68	70.34	15 39 43.4	- 605.3	16 15.6	59 34.4
	49 Libræ - -	5½	15 54 4.39	+ .03			16 12			
	28 Scorpii -	4	16 5 31.22	+ .03			19 10			
26	Moon II.L.	-	16 19 5.93		152.90	71.34	S. 17 33 19.9	- 528.4	16 18.8	59 46.0
	Moon II.U.	25.5	16 50 5.17		156.91	72.28	19 10 11.2	- 437.9	16 21.4	59 55.5
	B.A.C. 5954	6	17 32 3.04	+ .03			21 51			
	58 Ophiuchi -	5	17 36 44.78	+ .03			21 38			
27	Moon II.L.	-	17 21 49.59		160.38	73.08	S. 20 27 39.2	- 334.8	16 23.3	60 2.5
	Moon II.U.	26.5	17 54 10.94		163.00	73.67	21 23 26.5	- 221.5	16 24.4	60 6.6
28	Moon II.L.	-	18 26 57.19		164.49	74.00	S. 21 55 47.4	- 101.1	16 24.7	60 7.5
	Moon II.U.	27.6	18 59 53.64		164.68	74.02	22 3 40.1	+ 22.5	16 23.9	60 4.9
29	Moon II.L.	-	19 32 44.12		163.50	73.72	S. 21 46 53.1	+ 144.7	16 22.2	59 58.6
	Moon II.U.	28.6	20 5 12.66		161.05	73.13	21 6 8.8	+ 261.3	16 19.6	59 48.9
30	Moon II.L.	-	20 37 5.20		157.55	72.29	S. 20 2 58.3	+ 368.5	16 15.9	59 35.5
31	Moon I.U.	0.1	21 5 48.20		153.45	71.26	S. 18 39 32.4	+ 463.5	16 11.4	59 18.9
	Moon I.L.	-	21 36 1.65		148.74	70.13	16 58 29.7	+ 544.5	16 6.1	58 59.6
Feb. 1	Moon I.U.	1.2	22 5 17.31		143.87	68.93	S. 15 2 42.9	+ 610.8	16 0.2	58 37.8
	Moon I.L.	-	22 33 34.82		139.09	67.76	12 55 8.1	+ 662.6	15 53.8	58 14.3
2	Moon I.U.	2.2	23 0 56.54		134.60	66.64	S. 10 38 35.1	+ 700.7	15 47.0	57 49.6
	Moon I.L.	-	23 27 26.89		130.55	65.63	8 15 41.9	+ 726.2	15 40.1	57 24.3
3	Moon I.U.	3.2	23 53 11.72		127.02	64.74	S. 5 48 52.0	+ 740.4	15 33.2	56 58.9
	Moon I.L.	-	0 18 17.67		124.07	63.99	3 20 12.3	+ 744.7	15 26.4	56 34.0
	B.A.C. 81 -	6½	0 18 47.39	- .01			2 50			
	14 Ceti - -	6½	0 29 49.39	- .01			1 7			
4	Moon I.U.	4.3	0 42 51.85		121.73	63.41	S. 0 51 34.3	+ 740.3	15 19.9	56 10.2
	Moon I.L.	-	1 7 1.53		119.99	62.97	N. 1 35 24.3	+ 728.3	15 13.8	55 47.7
	29 Ceti - -	6½	1 2 14.89	- .01			1 25			
	35 Ceti - -	6½	1 6 48.03	- .01			1 53			
5	Moon I.U.	5.3	1 30 53.90		118.84	62.69	N. 3 59 17.3	+ 709.5	15 8.1	55 27.1
	Moon I.L.	-	1 54 35.94		118.26	62.56	6 18 48.5	+ 684.7	15 3.1	55 8.5
	7 Piscium -	4½	1 35 38.15	- .02			4 55			
	61 Ceti - -	4½	2 7 5.99	- .02			8 20			
6	Moon I.U.	6.3	2 18 14.33		118.22	62.57	N. 8 32 48.0	+ 654.3	14 58.6	54 52.3
	Moon I.L.	-	2 41 55.31		118.69	62.71	10 40 10.8	+ 618.7	14 54.9	54 38.7
	2 Ceti - -	4	2 38 55.67	- .02			9 39			
	2 Ceti - -	4½	2 53 45.62	- .02			N. 8 28			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of α 's Dec. in 1 hour. of Long.	Semidiameter.	Hor. Par.
Feb. 7	Moon I. u.	7.4	h m s 3 5 44.62	"	"	"	° ' " N. 12 39 55.1	+ 577.9	" ' " 14 51.9	" ' " 54 27.8
	Moon I. L.	-	3 29 47.42		119.60	62.97	14 30 59.7	+ 532.0	14 49.7	54 19.6
	f Tauri - -	4	3 24 44.22	- .02			12 33			
	B.A.C. 1119	6	3 33 8.88	- .02			16 10			
8	Moon I. u.	8.4	3 54 8.14		122.58	63.77	N. 16 12 23.2	+ 481.1	14 48.3	54 14.3
	Moon I. L.	-	4 18 50.36		124.49	64.26	17 43 4.6	+ 425.0	14 47.5	54 11.7
	B.A.C. 1272	6	4 1 37.85	- .02			17 3			
	8 ¹ Tauri - -	4	4 16 31.67	- .02			17 17			
9	Moon I. u.	9.4	4 43 56.66		126.58	64.79	N. 19 2 1.1	+ 363.6	14 47.6	54 11.8
	Moon I. L.	-	5 9 28.46		128.73	65.33	20 8 10.3	+ 297.1	14 48.3	54 14.6
	l Tauri - -	5½	5 1 14.31	- .02			20 16			
	n Tauri - -	6	5 12 36.50	- .02			21 59			
10	Moon I. u.	10.5	5 35 25.95		130.84	65.85	N. 21 0 31.0	+ 225.6	14 49.8	54 19.9
	Moon I. L.	-	6 1 48.00		132.80	66.33	21 38 5.6	+ 149.5	14 51.9	54 27.6
	B.A.C. 1835	6½	5 41 44.85	- .02			20 50			
	χ^1 Orionis -	4½	5 47 48.65	- .02			20 15			
11	Moon I. u.	11.5	6 28 32.11		134.50	66.73	N. 22 0 1.8	+ 69.3	14 54.6	54 37.5
	Moon I. L.	-	6 55 34.61		135.85	67.03	22 5 36.9	- 13.9	14 57.8	54 49.2
	d Geminor. -	6	6 44 54.41	- .01			21 53			
	g ² Geminor. -	4	6 57 32.01	- .01			20 44			
12	Moon I. u.	12.5	7 22 50.90		136.79	67.23	N. 21 54 19.0	- 99.3	15 1.4	55 2.6
	Moon I. L.	-	7 50 15.70		137.27	67.32	21 25 51.2	- 185.4	15 5.5	55 17.3
	85 Geminor. -	5½	7 49 11.83	- .01			20 11			
	μ^3 Cancri - -	5½	8 1 14.64	.00			21 54			
13	Moon I. u.	13.6	8 17 43.60		137.30	67.30	N. 20 40 13.0	- 270.8	15 9.8	55 33.1
	Moon I. L.	-	8 45 9.37		136.93	67.18	19 37 41.9	- 353.9	15 14.3	55 49.8
	η Cancri - -	6	8 26 17.99	.00			20 49			
	γ Cancri - -	4½	8 36 52.33	.00			21 52			
14	Moon I. u.	14.6	9 12 28.50		136.21	66.97	N. 18 18 53.1	- 433.4	15 19.0	56 6.9
	Moon I. L.	-	9 39 37.54		135.26	66.72	16 44 39.8	- 507.8	15 23.7	56 24.3
	8 Leonis -	6	9 30 55.79	+ .01			16 56			
	η Leonis -	3½	10 1 17.48	+ .01			17 18			
15	Moon II. u.	15.6	10 8 47.16		134.14	66.44	N. 14 56 10.5	- 575.9	15 28.4	56 41.5
	i Leonis -	6	10 26 17.02	+ .01			14 42			
	l Leonis -	5	10 43 25.98	+ .01			11 8			
16	Moon II. L.	-	10 35 30.27		133.06	66.17	N. 12 54 48.3	- 636.5	15 33.0	56 58.4
	Moon II. u.	16.7	11 2 1.06		132.10	65.94	10 42 8.2	- 688.7	15 37.5	57 14.7
	ϵ Virginis -	6	11 32 44.77	+ .02			8 45			
	ν Virginis -	4½	11 40 9.86	+ .02			7 9			
17	Moon II. L.	-	11 28 21.55		131.36	65.77	N. 8 19 54.7	- 731.9	15 41.7	57 30.3
	Moon II. u.	17.7	11 54 35.06		130.95	65.68	5 50 0.7	- 765.4	15 45.8	57 45.0
	c Virginis -	5	12 14 43.24	+ .02			3 56			
	B.A.C. 4254	6	12 32 43.36	+ .02			N. 2 28			

MOON-CULMINATING STARS, 1889. 369

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of R.A. for tell. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
Feb. 18	Moon II.L.	-	12 20 45.90		130.93	65.70	N. 3 14 44.9	- 788.8	15 49.5	57 58.7
	Moon II.U.	18.7	12 46 59.26		131.38	65.85	N. 0 35 11.7	- 801.6	15 52.9	58 11.3
	♍ Virginis -	4½	13 4 12.49	+ .03			S. 4 57			
	♋ Virginis -	3½	13 29 2.46	+ .02			0 2			
19	Moon II.L.	-	13 13 20.89		132.32	66.13	S. 2 5 29.9	- 803.5	15 56.1	58 22.9
	Moon II.U.	19.8	13 39 56.96		133.78	66.53	4 45 27.2	- 794.1	15 59.0	58 33.4
	B.A.C. 4647	6	13 49 9.34	+ .03			7 31			
	♍ Virginis -	4½	14 6 58.60	+ .03			9 45			
20	Moon II.L.	-	14 6 53.76		135.77	67.08	S. 7 22 22.8	- 773.2	16 1.5	58 42.8
	Moon II.U.	20.8	14 34 17.32		138.24	67.73	9 53 55.7	- 740.3	16 3.8	58 51.1
	♌ Libræ - -	6	14 48 21.21	+ .03			11 27			
	♌ Libræ - -	6	15 14 48.70	+ .03			15 9			
21	Moon II.L.	-	15 2 13.13		141.13	68.48	S. 12 17 41.0	- 695.2	16 5.8	58 58.3
	Moon II.U.	21.9	15 30 45.67		144.34	69.30	14 31 11.0	- 637.7	16 7.5	59 4.6
	♌ Libræ - -	4½	15 47 30.04	+ .03			16 24			
	49 Libræ - -	5½	15 54 5.25	+ .03			16 12			
22	Moon II.L.	-	15 59 57.85		147.71	70.14	S. 16 31 57.1	- 567.9	16 8.9	59 9.8
	Moon II.U.	22.9	16 29 50.59		151.06	70.97	18 17 33.3	- 486.1	16 10.0	59 13.8
	29 Ophiuchi -	6	16 55 20.86	+ .03			18 43			
	ξ Ophiuchi -	5	17 14 20.18	+ .03			21 0			
23	Moon II.L.	-	17 0 22.22		154.15	71.71	S. 19 45 40.2	- 393.2	16 10.8	59 16.7
	Moon II.U.	23.9	17 31 28.21		156.74	72.33	20 54 12.8	- 290.7	16 11.2	59 18.3
	58 Ophiuchi -	5	17 36 45.63	+ .03			21 38			
	4 Sagittarii -	5	17 52 59.72	+ .03			23 48			
24	Moon II.L.	-	18 3 1.17		158.60	72.75	S. 21 41 26.8	- 180.6	16 11.2	59 18.3
	Moon II.U.	25.0	18 34 51.04		159.53	72.95	22 6 7.4	- 65.7	16 10.8	59 16.9
	B.A.C. 6561	6	19 5 48.09	+ .03			21 50			
	50 Sagittarii -	6	19 19 40.61	+ .03			22 0			
25	Moon II.L.	-	19 6 45.84		159.42	72.90	S. 22 7 36.1	+ 50.9	16 10.0	59 13.7
	Moon II.U.	26.0	19 38 32.83		158.23	72.59	21 45 53.8	+ 165.6	16 8.6	59 8.6
	B.A.C. 6889	6	19 58 24.57	+ .02			21 38			
	4 Capricorni	6	20 11 28.38	+ .02			22 9			
26	Moon II.L.	-	20 9 59.58		156.07	72.04	S. 21 1 43.1	+ 275.1	16 6.6	59 1.5
	Moon II.U.	27.0	20 40 55.16		153.08	71.28	19 56 24.5	+ 376.4	16 4.2	58 52.4
27	Moon II.L.	-	21 11 11.03		149.49	70.39	S. 18 31 49.7	+ 467.4	16 1.1	58 41.2
	Moon II.U.	28.1	21 40 41.41		145.54	69.39	16 50 14.3	+ 546.3	15 57.5	58 28.1
28	Moon II.L.	-	22 9 23.42		141.46	68.36	S. 14 54 8.8	+ 612.4	15 53.5	58 15.2
	Moon II.U.	29.1	22 37 16.74		137.46	67.35	12 46 9.6	+ 665.3	15 48.9	57 56.5
Mar. 1	Moon I.L.	-	23 2 10.50		133.84	66.38	S. 10 28 53.1	+ 705.4	15 44.0	57 38.5
2	Moon I.U.	0.6	23 28 35.58		130.41	65.50	S. 8 4 49.7	+ 733.2	15 38.8	57 19.4
	Moon I.L.	-	23 54 22.02		127.41	64.73	S. 5 36 20.8	+ 749.8	15 33.3	56 59.5

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of * ^s R.A. for fol. Day.	Var. of (°) R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^t Merid.	Apparent Declination.	Var of (°) Dec. in 1 hour. of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
Mar. 3	Moon I. u.	1.6	0 19 35.33		124.89	64.09	S. 3 5 36.8	+ 755.9	15 27.8	56 39.2
	Moon I. L.	-	0 44 21.49		122.89	63.59	S. 0 34 37.0	+ 752.6	15 22.3	56 19.0
4	Moon I. u.	2.7	1 8 46.71		121.40	63.22	N. 1 54 51.5	+ 740.8	15 16.9	55 59.2
	Moon I. L.	-	1 32 57.15		120.42	62.99	4 21 12.0	+ 721.4	15 11.7	55 40.2
	μ Piscium -	5	1 24 20.85	- .01			5 34			
	ν Piscium -	4½	1 35 37.83	.00			4 55			
5	Moon I. u.	3.7	1 56 58.85		119.94	62.90	N. 6 42 57.1	+ 695.0	15 6.8	55 22.4
	Moon I. L.	-	2 20 57.53		119.92	62.93	8 58 47.0	+ 662.3	15 2.4	55 6.1
	β Ceti -	4	2 22 14.18	- .01			7 58			
	B.A.C. 830 -	6	2 36 29.28	- .02			10 16			
6	Moon I. u.	4.7	2 44 58.62		120.33	63.08	N. 11 7 28.7	+ 623.7	14 58.4	54 51.6
	Moon I. L.	-	3 9 7.09		121.14	63.33	13 7 54.5	+ 579.7	14 55.1	54 39.2
	α Tauri -	3½	3 18 49.48	- .02			8 38			
	γ Tauri -	4	3 24 43.78	- .02			12 33			
7	Moon I. u.	5.8	3 33 27.27		122.28	63.67	N. 14 58 59.4	+ 530.3	14 52.3	54 29.1
	Moon I. L.	-	3 58 2.90		123.70	64.08	16 39 41.5	+ 475.9	14 50.2	54 21.5
	B.A.C. 1272	6	4 1 37.38	- .02			17 3			
	δ ¹ Tauri -	4	4 16 31.20	- .02			17 17			
8	Moon I. u.	6.8	4 22 56.95		125.34	64.53	N. 18 9 1.0	+ 416.6	14 48.9	54 16.5
	Moon I. L.	-	4 48 11.51		127.11	65.01	19 25 59.7	+ 352.4	14 48.2	54 14.2
	ι Tauri -	5½	4 44 52.17	- .02			18 39			
	μ Tauri -	5½	5 05 3.03	- .02			18 30			
9	Moon I. u.	7.8	5 13 47.67		128.92	65.50	N. 20 29 41.2	+ 283.7	14 48.4	54 14.8
	Moon I. L.	-	5 39 45.52		130.70	65.96	21 19 12.0	+ 210.7	14 49.3	54 18.2
	χ ¹ Orionis -	4½	5 47 48.21	- .02			20 15			
	χ ⁴ Orionis -	5	5 57 19.45	- .02			20 8			
10	Moon I. u.	8.9	6 6 4.02		132.35	66.37	N. 21 53 42.6	+ 133.8	14 51.0	54 24.4
	Moon I. L.	-	6 32 41.15		133.79	66.73	22 12 29.3	+ 53.5	14 53.5	54 33.4
	μ Geminor. -	3	6 16 14.59	- .01			22 35			
	B.A.C. 2238	6	6 45 16.40	- .02			23 44			
11	Moon I. u.	9.9	6 59 33.96		134.96	67.00	N. 22 14 56.0	- 29.4	14 56.6	54 44.8
	Moon I. L.	-	7 26 38.80		135.79	67.19	22 0 36.3	- 114.1	15 0.4	54 58.7
	δ Geminor. -	3½	7 13 29.80	- .02			22 11			
	63 Geminor. -	5½	7 21 9.21	- .02			21 40			
12	Moon I. u.	10.9	7 53 51.62		136.28	67.28	N. 21 29 15.1	- 199.5	15 4.8	55 14.8
	Moon I. L.	-	8 21 8.26		136.43	67.28	20 40 51.0	- 284.4	15 9.7	55 32.8
	μ ² Cancri -	5½	8 1 14.40	- .02			21 54			
	η Cancri -	6	8 26 17.81	- .01			20 49			
13	Moon I. u.	12.0	8 48 24.82		136.28	67.20	N. 19 35 37.6	- 367.5	15 15.1	55 52.5
	Moon I. L.	-	9 15 38.02		135.88	67.07	18 14 3.4	- 447.6	15 20.7	56 13.3
	80 Cancri -	6½	9 5 43.16	- .01			18 30			
	83 Cancri -	6	9 12 47.71	- .01			N. 18 10			

MOON-CULMINATING STARS, 1889. 37

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of * & R.A. for foll. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^s Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			h m s	"	"	"	° ' "	"	"	"
Mar. 14	Moon I. v.	13.0	9 42 45.38		135.33	66.89	N. 16 36 52.8	- 523.3	15 26.7	56 35.6
	Moon I. L.	-	10 9 45.56		134.70	66.70	14 45 6.1	- 593.4	15 32.7	56 57.2
	34 Leonis -	6	10 5 40.77	.00			13 54			
	37 Leonis -	6	10 10 44.04	-.01			14 17			
15	Moon I. v.	14.0	10 36 38.33		134.11	66.53	N. 12 39 58.8	- 656.6	15 38.7	57 19.3
	Moon I. L.	-	11 3 24.69		133.65	66.40	10 23 0.6	- 711.7	15 44.6	57 40.5
	1 Leonis -	5	10 43 26.14	.00			11 8			
	4 Leonis -	4	11 18 9.04	.00			11 8			
16	Moon I. v.	15.1	11 30 6.79		133.41	66.33	N. 7 55 55.4	- 757.6	15 50.3	58 1.5
	* Virginis -	4½	11 55 11.97	+ .01			7 14			
	11 Virginis -	6	12 4 24.88	.00			6 25			
17	Moon II. L.	-	11 59 0.48		133.49	66.35	N. 5 20 39.3	- 793.3	15 55.5	58 20.7
	Moon II. v.	16.1	12 25 44.68		133.94	66.47	2 39 20.0	- 818.0	16 0.3	58 38.1
	B.A.C. 4254	6	12 32 43.78	+ .01			2 28			
	37 Virginis -	6	12 45 58.69	+ .02			N. 3 40			
18	Moon II. L.	-	12 52 36.78		134.82	66.70	S. 0 5 44.1	- 830.7	16 4.5	58 53.5
	Moon II. v.	17.1	13 19 42.00		136.13	67.06	2 52 5.4	- 830.7	16 8.0	59 6.6
	80 Virginis -	6	13 29 45.58	+ .02			4 50			
	B.A.C. 4572	6	13 38 8.05	+ .02			4 56			
19	Moon II. L.	-	13 47 5.70		137.89	67.53	S. 5 37 8.7	- 817.6	16.10.9	59 17.2
	Moon II. v.	18.2	14 14 53.13		140.08	68.11	8 18 13.0	- 790.8	16 13.1	59 25.1
	† Libræ -	6	14 48 21.89	+ .02			11 27			
	8 Libræ -	5	14 55 2.99	+ .02			8 5			
20	Moon II. L.	-	14 43 8.98		142.62	68.78	S. 10 52 33.8	- 750.3	16 14.6	59 30.6
	Moon II. v.	19.2	15 11 57.08		145.43	69.51	13 17 25.7	- 696.0	16 15.4	59 33.5
	7 Libræ -	6	15 37 50.30	+ .03			15 19			
	6 Libræ -	4½	15 47 30.82	+ .02			16 24			
21	Moon II. L.	-	15 41 19.82		148.37	70.27	S. 15 30 4.9	- 628.3	16 15.5	59 34.1
	Moon II. v.	20.3	16 11 17.71		151.26	71.01	17 27 55.0	- 548.0	16 15.1	59 32.5
	B.A.C. 5580	6	16 35 22.07	+ .03			19 43			
	B.A.C. 5700	6½	16 50 32.42	+ .03			19 22			
22	Moon II. L.	-	16 41 49.02		153.90	71.68	S. 19 8 30.6	- 456.2	16 14.1	59 29.6
	Moon II. v.	21.3	17 12 49.50		156.08	72.23	20 29 44.6	- 354.7	16 12.7	59 23.8
	B.A.C. 5954	6	17 32 4.75	+ .03			21 51			
	58 Ophiuchi -	5	17 36 46.48	+ .03			21 38			
23	Moon II. L.	-	17 44 12.32		157.59	72.61	S. 21 29 53.9	- 245.8	16 10.9	59 17.1
	Moon II. v.	22.3	18 15 48.37		158.26	72.78	22 7 44.7	- 132.1	16 8.7	59 9.2
	28 Sagittarii -	6	18 39 38.68	+ .03			22 30			
	31 Sagittarii -	6	18 45 27.88	+ .03			22 3			
24	Moon II. L.	-	18 47 26.96		158.00	72.72	S. 22 22 38.2	- 16.8	16 6.3	59 0.1
	Moon II. v.	23.4	19 18 56.66		156.79	72.42	22 14 32.4	+ 97.2	16 3.6	58 50.2
	B.A.C. 6727	6½	19 33 26.22	+ .03			23 41			
	B.A.C. 6864	6	19 54 47.15	+ .03			S. 23 2			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for full Day.	Var. of α 's R.A. in 1 hour of Long.	Std. Time of Semid. pass ⁺ Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Mar. 25	Moon II.L.	-	h m s	"	"	"	° ' "	"	"	"
	Moon II.U.	24.4	19 50 6.37		154.69	71.90	S. 21 44 2.1	+ 206.9	16 0.6	58 39.3
	20 Capricorni	6	20 20 46.34		151.86	71.19	20 52 14.6	+ 309.7	15 57.5	58 27.8
	7 Capricorni	5½	20 53 16.55	+ .03			19 28			
			20 58 3.89	+ .03			20 18			
26	Moon II.L.	-	20 50 48.83		148.48	70.34	S. 19 40 45.5	+ 403.5	15 54.1	58 15.5
	Moon II.U.	25.5	21 20 8.59		144.77	69.39	18 11 31.0	+ 487.0	15 50.6	58 2.7
	8 Capricorni	3	21 40 53.37	+ .03			16 38			
	29 Aquarii	6	21 56 20.68	+ .02			17 30			
27	Moon II.L.	-	21 48 42.83		140.94	68.40	S. 16 26 41.4	+ 559.3	15 46.9	57 49.3
	Moon II.U.	26.5	22 16 31.24		137.16	67.41	14 28 34.1	+ 619.9	15 43.1	57 35.3
	70 Aquarii	6	22 42 38.29	+ .02			11 8			
	74 Aquarii	6	22 47 36.55	+ .02			12 12			
28	Moon II.L.	-	22 43 35.40		133.58	66.46	S. 12 19 29.8	+ 668.9	15 39.1	57 20.8
	Moon II.U.	27.5	23 9 58.51		130.33	65.60	10 14 57.7	+ 706.6	15 35.0	57 5.7
29	Moon II.L.	-	23 35 44.91		127.48	64.83	S. 7 37 35.2	+ 733.4	15 30.8	56 50.4
	Moon II.U.	28.6	0 0 59.74		125.07	64.18	5 9 57.7	+ 749.9	15 26.5	56 34.6
30	Moon II.L.	-	0 25 48.53		123.14	63.65	S. 2 38 17.4	+ 756.6	15 22.2	56 18.7
31	Moon I.U.	0.0	0 48 10.53		121.75	63.26	S. 0 7 2.7	+ 754.3	15 17.9	56 2.8
	Moon I.L.	-	1 12 25.07		120.76	63.00	N. 2 22 52.8	+ 743.6	15 13.6	55 47.2
Apr. 1	Moon I.U.	1.1	1 36 30.49		120.22	62.88	N. 4 49 51.0	+ 724.9	15 9.4	55 31.8
	Moon I.L.	-	2 0 32.17		120.13	62.87	7 12 19.9	+ 698.8	15 5.4	55 17.2
2	Moon I.U.	2.1	2 24 35.09		120.43	62.98	N. 9 28 53.6	+ 665.7	15 1.6	55 3.3
	Moon I.L.	-	2 48 43.87		121.09	63.19	11 38 11.2	+ 626.2	14 58.1	54 50.6
3	Moon I.U.	3.1	3 13 2.50		122.06	63.48	N. 13 38 56.9	+ 580.5	14 55.0	54 39.1
	Moon I.L.	-	3 37 34.39		123.29	63.85	15 29 58.9	+ 529.0	14 52.4	54 29.3
	B.A.C. 1119	6	3 33 8.05	- .01			16 10			
	B.A.C. 1206	6	3 46 47.47	- .01			17 0			
4	Moon I.U.	4.2	4 22 2.19		124.70	64.26	N. 17 10 10.0	+ 472.0	14 50.2	54 21.3
	Moon I.L.	-	4 27 27.76		126.24	64.71	18 38 26.5	+ 409.9	14 48.5	54 15.3
	6 Tauri	3½	4 22 6.88	- .01			18 56			
	B.A.C. 1468	6	4 39 46.69	- .01			18 32			
5	Moon I.U.	5.2	4 52 52.04		127.81	65.16	N. 19 53 49.5	+ 343.1	14 47.5	54 11.6
	Moon I.L.	-	5 18 35.16		129.36	65.59	20 55 24.6	+ 272.0	14 47.1	54 10.2
	114 Tauri	6	5 20 57.04	- .01			21 50			
	B.A.C. 1733	6½	5 27 1.71	- .02			20 24			
6	Moon I.U.	6.2	5 44 36.19		130.79	65.99	N. 21 42 22.9	+ 197.1	14 47.5	54 11.5
	Moon I.L.	-	6 10 53.38		132.04	66.34	22 14 2.5	+ 119.0	14 48.5	54 15.3
	7 Geminor.	3½	6 8 9.91	- .01			22 32			
	14 Geminor.	3	6 16 14.09	- .02			22 34			
7	Moon I.U.	7.3	6 37 24.22		133.06	66.62	N. 22 29 48.7	+ 38.3	14 50.3	54 21.9
	Moon I.L.	-	7 4 5.67		133.80	66.81	22 29 15.0	- 44.2	14 52.8	54 31.1
	44 Geminor.	6½	6 58 37.12	- .02			22 48			
	8 Geminor.	3½	7 13 29.31	- .02			N. 22 11			

MOON-CULMINATING STARS, 1889. 373

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of R.A. for foll. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Apr. 8	Moon I. U.	8.3	h m s	s	s	s	° ' "	"	"	"
	Moon I. L.	-	7 30 54.33		134.26	66.93	N. 22 12 4.9	- 127.6	14 56.2	54 43.3
	85 Geminor.	5½	7 57 46.73		134.43	66.97	21 38 12.1	- 211.1	15 0.2	54 57.9
	7 Cancri	6½	7 49 11.11	- .02			20 11			
		6½	7 57 17.18	- .02			22 23			
9	Moon I. U.	9.3	8 24 39.68		134.36	66.94	N. 20 47 41.3	- 293.8	15 4.9	55 15.2
	Moon I. L.	-	8 51 30.52		134.09	66.85	19 40 48.6	- 374.6	15 10.3	55 34.9
	8 Cancri	4	8 38 22.74	- .02			18 34			
	80 Cancri	6½	9 54 2.82	- .02			18 30			
10	Moon I. U.	10.4	9 18 17.34		133.70	66.72	N. 18 18 1.3	- 452.7	15 16.2	55 56.7
	Moon I. L.	-	9 44 59.14		133.27	66.58	16 39 58.8	- 527.0	15 22.6	56 20.3
	8 Leonis	6	9 30 55.46	- .01			16 56			
	7 Leonis	3½	10 1 17.30	- .01			17 18			
11	Moon I. U.	11.4	10 11 36.01		132.89	66.46	N. 14 47 32.8	- 596.5	15 29.5	56 45.4
	Moon I. L.	-	10 38 9.07		132.65	66.36	12 41 46.2	- 660.2	15 36.6	57 11.5
	1 Leonis	6	10 26 16.95	- .01			14 42			
	1 Leonis	6	10 40 33.14	- .01			14 47			
12	Moon I. U.	12.4	11 44 0.58		132.64	66.33	N. 10 23 55.9	- 716.9	15 43.9	57 38.1
	Moon I. L.	-	11 31 13.72		132.94	66.39	7 55 32.0	- 765.6	15 51.1	58 4.6
	1 Virginis	6	11 32 45.03	- .01			8 45			
	1 Virginis	4½	11 39 34.69	- .01			8 53			
13	Moon I. U.	13.5	11 57 52.65		133.61	66.53	N. 5 18 19.2	- 804.9	15 58.2	58 30.5
	Moon I. L.	-	12 24 42.14		134.71	66.80	2 34 17.3	- 833.6	16 4.9	58 55.0
	1 Virginis	5	12 14 43.71	- .01			3 56			
	B.A.C. 4254	6	12 32 43.91	.00			N. 2 28			
14	Moon I. U.	14.5	12 51 47.59		136.28	67.19	S. 0 14 18.3	- 850.3	16 11.1	59 17.7
	Moon I. L.	-	13 19 14.68		138.32	67.70	3 4 56.4	- 853.8	16 16.5	59 37.8
	80 Virginis	6	13 29 45.87	.00			4 50			
	B.A.C. 4572	6	13 38 8.36	+ .01			4 56			
15	Moon II. U.	15.5	13 49 25.74		140.94	68.34	S. 5 54 51.0	- 842.8	16 21.2	59 54.9
	95 Virginis	6	14 0 51.63	+ .01			8 47			
	106 Virginis	6	14 22 51.64	+ .02			6 24			
16	Moon II. L.	-	14 17 54.19		143.87	69.08	S. 8 41 2.8	- 816.5	16 24.9	60 8.5
	Moon II. U.	16.6	14 46 59.78		147.11	69.90	11 20 22.8	- 774.1	16 27.6	60 18.4
	1 Libræ	6	15 16 51.30	+ .02			14 44			
	1 Libræ	4	15 22 0.91	+ .02			16 20			
17	Moon II. L.	-	15 16 45.50		150.53	70.75	S. 13 49 36.4	- 715.4	16 29.2	60 24.2
	Moon II. U.	17.6	15 47 12.30		153.92	71.61	16 5 30.1	- 640.9	16 29.7	60 26.0
	B.A.C. 5408	6½	16 8 16.28	+ .02			18 15			
	χ Ophiuchi	6	16 20 36.24	+ .02			18 12			
18	Moon II. L.	-	16 18 18.53		157.06	72.40	S. 18 4 59.0	- 551.6	16 29.2	60 24.0
	Moon II. U.	18.6	16 49 59.63		159.68	73.06	19 45 16.4	- 449.4	16 27.6	60 18.3
	B.A.C. 5866	6	17 18 3.96	+ .02			21 20			
	B.A.C. 5954	6	17 32 5.56	+ .03			S. 21 51			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for tell. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Apr. 19	Moon II.L.	-	h m s	"	"	"	"	"	"	"
	Moon II.U.	19.7	17 22 7.84		161.54	73.54	S. 21 4 3.0	- 336.9	16 25.1	60 9.3
	14 Sagittarii	6	17 54 32.67	+ .03	162.42	73.78	21 59 35.8	- 217.7	16 21.9	59 57.4
	21 Sagittarii	5	18 7 36.42	+ .03			21 45			
			18 18 44.66	+ .03			20 36			
	20 Moon II.L.	-	18 27 1.48		162.19	73.76	S. 22 30 55.1	- 95.4	16 18.0	59 43.3
	Moon II.U.	20.7	18 59 30.66		160.82	73.46	22 37 47.2	+ 26.2	16 13.7	59 27.2
	50 Sagittarii	6	19 19 42.28	+ .03			22 0			
	B.A.C. 6699	6½	19 28 58.19	+ .03			23 33			
	21 Moon II.L.	-	19 31 16.97		158.40	72.91	S. 22 20 43.8	+ 143.3	16 8.9	59 9.6
	Moon II.U.	21.8	20 2 38.78		155.11	72.13	21 40 56.3	+ 253.1	16 3.8	58 51.1
	B.A.C. 7049	6	20 23 0.24	+ .03			22 46			
	17 Capricorni	6	20 39 43.44	+ .03			21 55			
	22 Moon II.L.	-	20 33 16.98		151.18	71.17	S. 20 40 8.3	+ 353.1	15 58.6	58 32.1
	Moon II.U.	22.8	21 3 5.54		146.87	70.11	19 20 24.7	+ 442.1	15 53.4	58 12.9
	7 Capricorni	3½	21 33 55.83	+ .03			17 10			
	8 Capricorni	3	21 40 54.07	+ .03			16 38			
	23 Moon II.L.	-	21 32 1.44		142.44	68.99	S. 17 44 3.8	+ 519.3	15 48.2	57 53.8
	Moon II.U.	23.8	22 0 4.54		138.11	67.88	15 53 28.4	+ 584.6	15 43.0	57 34.9
	56 Aquarii	6	22 24 19.65	+ .03			15 9			
	58 Aquarii	6	22 41 48.19	+ .03			14 38			
	24 Moon II.L.	-	22 27 16.98		134.03	66.80	S. 13 51 0.4	+ 638.2	15 38.0	57 16.4
	Moon II.U.	24.9	22 53 42.69		130.33	65.82	11 38 56.1	+ 680.7	15 33.1	56 58.6
	43 Aquarii	5	23 13 10.04	+ .02			10 13			
	B.A.C. 8214	6½	23 29 46.90	+ .02			8 5			
	25 Moon II.L.	-	23 19 26.86		127.11	64.93	S. 9 19 24.9	+ 712.8	15 28.4	56 41.3
	Moon II.U.	25.9	23 44 35.41		124.40	64.18	6 54 28.3	+ 735.1	15 23.8	56 24.6
	30 Piscium	5	23 56 14.88	+ .02			6 38			
	B.A.C. 17	6	0 4 36.98	+ .02			5 52			
	26 Moon II.L.	-	0 9 14.69		122.24	63.57	S. 4 25 59.7	+ 748.2	15 19.5	56 8.8
	Moon II.U.	26.9	0 33 31.22		120.61	63.10	S. 1 55 45.7	+ 752.7	15 15.3	55 53.5
	27 Moon II.L.	-	0 57 31.43		119.51	62.78	N. 0 34 33.1	+ 749.1	15 11.4	55 39.0
	Moon II.U.	28.0	1 21 21.51		118.92	62.60	3 3 21.5	+ 737.7	15 7.6	55 25.2
	28 Moon II.L.	-	1 45 7.37		118.80	62.54	N. 5 29 8.6	+ 718.9	15 4.0	55 12.1
	Moon II.U.	29.0	2 8 54.47		119.12	62.62	7 50 26.7	+ 692.9	15 0.7	54 59.9
	29 Moon II.L.	-	2 32 47.73		119.82	62.80	N. 10 5 51.0	+ 660.0	14 57.6	54 48.5
	30 Moon I.U.	0.4	2 54 45.31		120.82	63.09	N. 12 13 59.6	+ 620.4	14 54.8	54 38.2
	Moon I.L.	-	3 19 2.47		122.10	63.44	14 13 33.6	+ 574.2	14 52.2	54 28.9
May 1	Moon I.U.	1.5	3 43 36.39		123.59	63.86	N. 16 3 16.3	+ 521.9	14 50.0	54 20.7
	Moon I.L.	-	4 8 29.02		125.20	64.31	17 41 55.2	+ 463.6	14 48.2	54 14.0
	1 Moon I.U.	2.5	4 33 41.30		126.85	64.78	N. 19 8 21.7	+ 399.9	14 46.7	54 8.6
	Moon I.L.	-	4 59 13.14		128.44	65.23	N. 20 21 33.4	+ 331.2	14 45.7	54 5.0

MOON-CULMINATING STARS, 1889. 375

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for fol. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>"</i>	<i>"</i>	<i>"</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
May 3	Moon I. u.	3.5	5 25 3.37		129.90	65.65	N. 21 20 33.9	+ 258.2	14 45.2	54 3.1
	Moon I. L.	-	5 51 9.87		131.14	66.00	22 4 35.0	+ 181.5	14 45.2	54 3.1
	χ^2 Orionis	6	5 48 21.50	- .01			19 44			
	χ^4 Orionis	5	5 57 18.59	- .01			20 8			
4	Moon I. u.	4.6	6 17 29.72		132.11	66.29	N. 22 32 58.1	+ 102.0	14 45.8	54 5.2
	Moon I. L.	-	6 43 59.26		132.76	66.49	22 45 14.7	+ 20.5	14 47.0	54 9.7
	d Geminor.	6	6 44 53.12	- .01			21 53			
	44 Geminor.	6½	6 58 36.70	- .01			22 48			
5	Moon I. u.	5.6	7 10 34.55		133.07	66.60	N. 22 41 7.0	- 61.9	14 48.9	54 16.5
	Moon I. L.	-	7 37 11.61		133.06	66.62	22 20 29.3	- 144.3	14 51.4	54 25.7
	B.A.C. 2514	6½	7 32 28.70	- .02			24 28			
	κ Geminor.	3½	7 37 44.05	- .01			24 40			
6	Moon I. u.	6.6	8 3 46.78		132.76	66.57	N. 21 43 26.4	- 225.9	14 54.6	54 37.5
	Moon I. L.	-	8 30 16.97		132.24	66.45	20 50 13.9	- 305.8	14 58.5	54 51.9
	η Cancri	6	8 26 16.97	- .02			20 49			
	39 Cancri	6	8 33 42.96	- .02			20 24			
7	Moon I. u.	7.7	8 56 39.99		131.58	66.28	N. 19 41 16.8	- 383.2	15 3.1	55 8.8
	Moon I. L.	-	9 22 54.67		130.87	66.10	18 17 9.8	- 457.4	15 8.5	55 28.3
	80 Cancri	6½	9 5 42.40	- .02			18 30			
	83 Cancri	6	9 12 46.97	- .01			18 11			
8	Moon I. u.	8.7	9 49 0.98		130.20	65.92	N. 16 38 35.1	- 527.7	15 14.4	55 50.1
	Moon I. L.	-	10 15 0.13		129.69	65.78	14 46 23.3	- 593.5	15 20.9	56 14.0
	37 Leonis	6	10 10 43.48	- .01			14 17			
	42 Leonis	6	10 15 52.42	- .01			15 32			
9	Moon I. u.	9.7	10 40 54.47		129.42	65.70	N. 12 41 32.5	- 654.1	15 28.0	56 39.9
	Moon I. L.	-	11 6 47.49		129.48	65.69	10 25 9.7	- 708.7	15 35.5	57 7.4
	B.A.C. 3845	6	11 10 10.58	- .01			13 27			
	ϵ Leonis	4	11 18 8.75	- .01			11 8			
10	Moon I. u.	10.8	11 32 43.61		129.95	65.79	N. 7 58 31.6	- 756.5	15 43.3	57 36.1
	Moon I. L.	-	11 58 48.23		130.90	66.02	5 23 6.6	- 796.3	15 51.3	58 5.4
	κ Virginis	4½	11 55 11.85	- .01			7 14			
	11 Virginis	6	12 4 24.80	.00			6 25			
11	Moon I. u.	11.8	12 25 7.41		132.39	66.38	N. 2 40 36.4	- 827.1	15 59.3	58 34.7
	Moon I. L.	-	12 51 47.85		134.45	66.89	S. 0 7 1.3	- 847.3	16 7.2	59 3.4
	38 Virginis	6	12 47 31.19	.00			2 57			
	46 Virginis	6	12 54 54.02	.00			2 46			
12	Moon I. u.	12.8	13 18 56.48		137.09	67.54	S. 2 57 30.7	- 855.4	16 14.7	59 30.9
	Moon I. L.	-	13 46 40.31		140.31	68.34	5 48 17.1	- 849.8	16 21.5	59 56.4
	80 Virginis	6	13 29 45.93	.00			4 50			
	B.A.C. 4572	6	13 38 8.45	.00			4 56			
13	Moon I. u.	13.9	14 15 5.96		144.05	69.26	S. 8 36 25.4	- 828.8	16 27.6	60 18.4
	Moon I. L.	-	14 44 19.05		148.20	70.28	11 18 41.8	- 791.0	16 32.7	60 37.1
	δ^1 Libræ	6	14 48 22.66	.00			11 27			
	18 Libræ	6½	14 52 55.07	.00			S. 10 42			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Std. Time of Semid. pass Merid.	Apparent Declination.	Var. of α 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			^h ^m ^s	"	"	"	^o ['] ["]	"	['] ["]	['] ["]
May 14	Moon I.U.	14.9	15 14 23.68		152.60	71.34	S. 13 51 38.0	- 735.3	16 36.7	60 51.8
	♌ Libræ -	4½	15 47 31.89	+ .01			16 24			
	49 Libræ -	5½	15 54 7.14	+ .01			16 12			
15	Moon II.L.	-	15 47 46.27		157.18	72.41	S. 16 11 36.9	- 661.4	16 39.5	61 1.8
	Moon II.U.	15.9	16 19 37.57		161.29	73.40	18 15 2.7	- 570.0	16 40.8	61 6.8
	B.A.C. 5700	6½	16 50 33.77	+ .02			19 22			
	29 Ophiuchi -	6	16 55 23.07	+ .02			18 43			
16	Moon II.L.	-	16 52 14.63		164.75	74.24	S. 19.58 33.8	- 462.7	16 40.8	61 6.7
	Moon II.U.	17.0	17 25 27.56		167.21	74.85	21 19 17.7	- 342.7	16 39.4	61 1.6
	58 Ophiuchi -	5	17 36 48.01	+ .03			21 38			
	4 Sagittarii -	5	17 53 2.19	+ .03			23 48			
17	Moon II.L.	-	17 59 2.64		168.39	75.16	S. 22 15 4.4	- 214.0	16 36.8	60 51.9
	Moon II.U.	18.0	18 32 43.30		168.12	75.13	22 44 39.5	- 81.6	16 32.9	60 37.8
	B.A.C. 6576	6	19 8 48.25	+ .03			24 22			
	B.A.C. 6607	6	19 13 59.63	+ .03			22 37			
18	Moon II.L.	-	19 6 11.78		166.38	74.76	S. 22 47 49.0	+ 49.4	16 28.1	60 20.2
	Moon II.U.	19.1	19 39 11.06		163.30	74.07	22 25 18.0	+ 174.4	16 22.5	59 59.5
	B.A.C. 7049	6	20 23 1.13	+ .03			22 46			
	♐ Capricorni	5½	20 33 44.37	+ .03			18 32			
19	Moon II.L.	-	20 11 26.65		159.15	73.12	S. 21 38 42.8	+ 289.5	16 16.2	59 36.7
	Moon II.U.	20.1	20 42 47.73		154.27	71.97	20 30 18.9	+ 392.2	16 9.6	59 12.2
	♐ Capricorni	4½	21 30 52.04	+ .03			19 58			
	♐ Capricorni	5	21 36 27.70	+ .03			19 22			
20	Moon II.L.	-	21 13 7.63		149.02	70.70	S. 19 24 44.0	+ 481.2	16 2.7	58 46.9
	Moon II.U.	21.1	21 42 23.91		143.71	69.40	17 18 47.2	+ 556.0	15 55.7	58 21.3
	45 Aquarii -	6	22 13 3.33	+ .03			13 52			
	50 Aquarii -	6	22 18 30.31	+ .03			14 6			
21	Moon II.L.	-	22 10 37.49		138.61	68.11	S. 15 21 15.6	+ 617.1	15 48.7	57 55.8
	Moon II.U.	22.2	22 37 52.02		133.90	66.90	13 12 49.2	+ 665.3	15 41.9	57 30.9
	74 Aquarii -	6	22 47 37.90	+ .03			12 12			
	♑ Aquarii -	5	23 13 10.77	+ .03			10 13			
22	Moon II.L.	-	23 4 13.07		129.71	65.81	S. 10 55 55.3	+ 701.8	15 35.4	57 7.0
	Moon II.U.	23.2	23 29 47.42		126.12	64.84	8 32 47.8	+ 727.8	15 29.2	56 44.2
	B.A.C. 8274	6	23 42 49.00	+ .03			7 0			
	30 Piscium -	5	23 56 15.54	+ .03			6 38			
23	Moon II.L.	-	23 54 42.49		123.16	64.02	S. 6 5 27.5	+ 744.2	15 23.4	56 22.9
	Moon II.U.	24.2	0 19 5.91		120.85	63.37	3 35 42.7	+ 752.0	15 17.9	56 2.9
	15 Ceti -	6½	0 32 23.39	+ .02			1 7			
	20 Ceti -	5½	0 47 19.27	+ .03			1 45			
24	Moon II.L.	-	0 43 5.38		119.17	62.89	S. 1 5 12.5	+ 751.8	15 12.9	55 44.5
	Moon II.U.	25.3	1 6 48.31		118.09	62.56	N. 1 24 31.7	+ 744.4	15 8.3	55 27.7
	♒ Piscium -	5½	1 12 3.60	+ .02			3 2			
	♒ Piscium -	4½	1 35 38.37	+ .03			N. 4 55			

AT TRANSIT AT GREENWICH

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α & R.A. for full Day.	Var. of α & R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of δ & Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
May 25	Moon II.L.	-	1 30 21.76		117.58	62.38	N. 3 52 4.9	+ 730.0	15 4.1	55 12.3
	Moon II.u.	26.3	1 53 52.30		117.60	62.35	6 16 5.0	+ 708.9	15 0.3	54 58.5
26	Moon II.L.	-	2 17 25.98		118.09	62.46	N. 8 35 13.2	+ 681.4	14 57.0	54 46.2
	Moon II.u.	27.3	2 41 8.19		119.01	62.68	10 48 11.6	+ 647.3	14 54.0	54 35.3
27	Moon II.L.	-	3 5 3.58		120.28	63.00	N. 12 53 42.6	+ 606.8	14 51.4	54 25.7
	Moon II.u.	28.4	3 29 15.96		121.83	63.40	14 50 30.3	+ 560.1	14 49.2	54 17.7
28	Moon II.L.	-	3 53 48.18		123.57	63.85	N. 16 37 19.0	+ 507.0	14 47.3	54 10.9
	Moon II.u.	29.4	4 18 41.95		125.40	64.33	18 12 55.2	+ 448.0	14 45.8	54 5.4
29	Moon I.L.	-	4 41 48.21		127.16	64.82	N. 19 36 8.2	+ 383.3	14 44.7	54 1.3
30	Moon I.u.	0.8	5 7 24.60		128.88	65.28	N. 20 45 52.9	+ 313.4	14 44.0	53 58.6
	Moon I.L.	-	5 33 20.61		130.41	65.69	21 41 11.3	+ 239.0	14 43.6	53 57.3
31	Moon I.u.	1.8	5 59 33.17		131.63	66.03	N. 22 21 13.5	+ 160.9	14 43.7	53 57.5
	Moon I.L.	-	6 25 58.26		132.49	66.27	22 45 21.8	+ 80.1	14 44.2	53 59.4
June 1	Moon I.u.	2.9	6 52 31.21		132.93	66.42	N. 22 53 10.5	- 2.2	14 45.1	54 2.9
	Moon I.L.	-	7 19 7.04		132.96	66.45	22 44 27.4	- 85.0	14 46.6	54 8.2
	8 Geminor.	3½	7 13 28.68	.00			22 11			
	63 Geminor.	5½	7 21 8.08	.00			21 40			
2	Moon I.u.	3.9	7 45 40.81		132.60	66.39	N. 22 19 14.2	- 167.0	14 48.5	54 15.3
	Moon I.L.	-	8 12 8.16		131.90	66.24	21 37 45.8	- 247.3	14 51.0	54 24.5
	μ ² Cancri	5½	8 1 13.24	.00			21 54			
	B.A.C. 2788	6	8 13 52.41	-.01			21 6			
3	Moon I.u.	5.0	8 38 25.50		130.95	66.03	N. 20 40 28.5	- 325.0	14 54.1	54 35.8
	Moon I.L.	-	9 4 30.44		129.85	65.77	19 27 59.1	- 399.2	14 57.8	54 49.2
	80 Cancri	6½	9 5 42.08	.00			18 30			
	83 Cancri	6	9 12 46.65	-.01			18 11			
4	Moon I.u.	6.0	9 30 21.82		128.71	65.50	N. 18 1 2.9	- 469.4	15 2.1	55 4.9
	Moon I.L.	-	9 55 59.87		127.65	65.24	16 20 31.7	- 535.0	15 7.0	55 22.9
	ψ Leonis	6	9 37 40.93	-.91			14 32			
	η Leonis	3½	10 1 16.60	-.01			17 18			
5	Moon I.u.	7.0	10 21 26.20		126.78	65.03	N. 14 27 23.0	- 595.6	15 12.4	55 42.9
	Moon I.L.	-	10 46 43.69		126.19	64.89	12 22 38.7	- 650.8	15 18.5	56 5.1
	ι Leonis	6	10 26 16.30	-.01			14 42			
	ι Leonis	5	10 43 25.40	-.01			11 8			
6	Moon I.u.	8.0	11 11 56.38		126.00	64.84	N. 10 7 26.2	- 700.2	15 25.1	56 29.4
	Moon I.L.	-	11 37 9.45		126.27	64.91	7 42 58.6	- 743.3	15 32.2	56 55.4
	ω Virginis	6	11 32 44.55	-.01			8 45			
	ν Virginis	4½	11 40 9.70	-.01			7 9			
7	Moon I.u.	9.1	12 2 28.95		127.08	65.13	N. 5 10 35.1	- 779.4	15 39.7	57 22.9
	Moon I.L.	-	12 28 1.79		128.50	65.49	2 31 45.3	- 807.6	15 47.5	57 51.5
	ε Virginis	5	12 14 43.36	-.01			3 56			
	B.A.C. 4254	6	12 32 43.64	-.01			N. 2 28			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of *s R.A. for foll. Day.	Var. of *s R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^s Merid	Apparent Declination.	Var. of *s Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
June 8	Moon I. v.	10.1	12 53 55.48		130.56	66.01	3. 0 11 50.5	- 826.8	15 55.5	58 20.8
	Moon I. L.	-	13 20 18.02		133.31	66.71	2 58 16.6	- 835.7	16 3.6	58 50.3
	80 Virginis -	6	13 29 45.83	- .01			4 50			
	B.A.C. 4572	6	13 38 8.36	- .01			4 56			
9	Moon I. v.	11.1	13 47 17.59		136.74	67.57	3. 5 45 20.0	- 832.7	16 11.5	59 19.2
	Moon I. L.	-	14 15 2.26		140.81	68.57	8 30 27.3	- 816.1	16 19.0	59 46.8
	95 Virginis -	6	14 0 51.73	.00			8 47			
	106 Virginis -	6	14 22 51.85	- .01			6 24			
10	Moon I. v.	12.2	14 43 39.35		145.46	69.72	3. 11 10 43.9	- 784.0	16 26.0	60 12.5
	Moon I. L.	-	15 13 14.90		150.53	70.94	13 42 54.2	- 734.7	16 32.2	60 35.2
	03 Libræ -	6	15 16 51.79	.00			14 44			
	02 Libræ -	6	15 24 26.32	.00			16 14			
11	Moon I. v.	13.2	15 43 52.67		155.78	72.19	3. 16 3 24.9	- 667.2	16 37.5	60 54.4
	Moon I. L.	-	16 15 33.17		160.92	73.40	18 8 33.7	- 581.1	16 41.5	61 9.3
	χ Ophiuchi -	6	16 20 37.06	+ .01			18 12			
	24 Scorpii -	5	16 35 10.86	+ .01			17 32			
12	Moon I. v.	14.3	16 48 12.68		165.55	74.48	3. 19 54 40.0	- 477.1	16 44.2	61 19.2
	Moon I. L.	-	17 21 42.59		169.24	75.33	21 18 21.6	- 357.5	16 45.5	61 23.8
	B.A.C. 5866	6	17 18 5.07	+ .01			21 20			
	B.A.C. 5954	6	17 32 6.75	+ .01			21 51			
13	Moon II. v.	15.3	17 58 20.90		171.66	75.88	3. 22 16 53.0	- 226.2	16 45.2	61 22.9
	02 Sagittarii -	4	18 51 8.09	+ .02			21 15			
	0 Sagittarii -	4	18 58 3.46	+ .02			21 54			
14	Moon II. L.	-	18 32 46.54		172.32	76.05	3. 22 48 23.6	- 88.3	16 43.5	61 16.5
	Moon II. v.	16.3	19 7 9.63		171.23	75.82	22 52 8.9	+ 50.3	16 40.3	61 4.9
	B.A.C. 6671	6	19 24 19.86	+ .02			21 33			
	B.A.C. 6889	6	19 58 27.80	+ .03			21 38			
15	Moon II. L.	-	19 41 9.51		168.48	75.21	3. 22 28 36.5	+ 183.7	16 35.8	60 48.5
	Moon II. v.	17.4	20 14 27.73		164.35	74.28	21 39 19.4	+ 307.0	16 30.3	60 28.1
	27 Capricorni	6	21 3 13.75	+ .03			21 0			
	φ Capricorni	5½	21 9 20.23	+ .03			21 7			
16	Moon II. L.	-	20 46 49.94		159.22	73.09	3. 20 26 41.8	+ 416.6	16 23.8	60 4.4
	Moon II. v.	18.4	21 18 6.73		153.52	71.75	18 53 42.8	+ 510.4	16 16.6	59 38.0
	8 Capricorni	3	21 40 55.80	+ .03			16 38			
	29 Aquarii -	6	21 56 23.08	+ .03			17 30			
17	Moon II. L.	-	21 48 13.80		147.66	70.34	3. 17 3 36.6	+ 587.8	16 9.0	59 10.1
	Moon II. v.	19.5	22 17 11.18		141.96	68.95	14 59 38.6	+ 649.2	16 1.1	58 41.2
	70 Aquarii -	6	22 42 40.51	+ .03			11 8			
	74 Aquarii -	6	22 47 38.76	+ .03			12 12			
18	Moon II. L.	-	22 45 2.30		136.65	67.63	3. 12 44 53.8	+ 695.9	15 53.1	58 12.0
	Moon II. v.	20.5	23 11 53.04		131.91	66.41	10 22 11.2	+ 729.2	15 45.2	57 43.0
	B.A.C. 8274	6	23 42 49.84	+ .03			7 0			
	30 Piscium -	5	23 56 16.37	+ .03			3. 6 38			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^s Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			h m s	"	"	"	° ' "	"	"	"
June 19	Moon II.L.	-	23 37 50.74		127.83	65.35	S. 7 54 0.7	+ 750.8	15 37.6	57 15.0
	Moon II.U.	21.5	0 3 3.64		124.44	64.45	5 22 34.0	+ 762.1	15 30.3	56 48.3
	B.A.C. 81 -	6½	0 18 49.10	+ .03			2 50			
	14 Ceti - -	6½	0 29 51.00	+ .03			1 7			
	20 Moon II.L.	-	0 27 40.22		121.77	63.72	S. 2 49 46.1	+ 764.5	15 23.4	56 23.1
	Moon II.U.	22.6	0 51 48.89		119.79	63.17	S. 0 17 18.0	+ 759.0	15 17.1	55 59.8
	33 Ceti - -	6	1 4 50.78	+ .03			N. 1 51			
	f Piscium -	5½	1 12 4.36	+ .03			3 2			
	21 Moon II.L.	-	1 15 37.87		118.48	62.79	N. 2 13 20.6	+ 746.4	15 11.2	55 38.5
	Moon II.U.	23.6	1 39 14.89		117.79	62.58	4 40 48.5	+ 727.2	15 6.0	55 19.2
	† Ceti - -	4½	2 7 6.65	+ .03			8 20			
	B.A.C. 741 -	6½	2 18 34.21	+ .03			9 13			
22	Moon II.L.	-	2 24 7.22		117.69	62.52	N. 7 34 9.5	+ 701.9	15 1.3	55 2.1
	Moon II.U.	24.6	2 26 21.52		118.11	62.61	9 21 11.4	+ 670.7	14 57.3	54 47.3
	B.A.C. 830 -	6	2 36 30.09	+ .03			10 16			
	B.A.C. 987 -	6½	3 5 15.75	+ .03			12 38			
23	Moon II.L.	-	2 50 3.70		118.99	62.82	N. 11 31 43.5	+ 633.7	14 53.7	54 34.3
	Moon II.U.	25.7	3 13 58.92		120.27	63.13	13 34 15.9	+ 590.8	14 50.8	54 23.5
	B.A.C. 1119	6	3 33 8.78	+ .03			16 10			
	B.A.C. 1206	6	3 46 48.11	+ .02			17 0			
24	Moon II.L.	-	3 38 11.47		121.86	63.52	N. 15 27 38.1	+ 542.0	14 48.3	54 14.6
	Moon II.U.	26.7	4 24 4.51		123.67	63.98	17 10 39.8	+ 487.3	14 46.5	54 7.7
25	Moon II.L.	-	4 27 40.05		125.60	64.46	N. 18 42 11.2	+ 426.9	14 45.0	54 2.4
	Moon II.U.	27.8	4 52 58.84		127.53	64.95	20 1 4.5	+ 361.1	14 44.1	53 58.9
26	Moon II.L.	-	5 18 40.20		129.34	65.40	N. 21 6 16.0	+ 290.0	14 43.5	53 57.0
	Moon II.U.	28.8	5 44 42.06		130.92	65.80	21 56 47.2	+ 214.5	14 43.4	53 56.6
27	Moon II.L.	-	6 11 1.05		132.18	66.13	N. 22 31 49.5	+ 135.3	14 43.8	53 57.8
28	Moon I.U.	0.1	6 35 20.03		133.04	66.34	N. 22 50 44.8	+ 53.6	14 44.4	54 0.2
	Moon I.L.	-	7 15 8.88		133.40	66.45	22 53 9.0	- 29.7	14 45.5	54 4.2
29	Moon I.U.	1.2	7 28 39.75		133.33	66.44	N. 22 38 52.1	- 113.1	14 46.9	54 9.5
	Moon I.L.	-	7 55 17.07		132.82	66.32	22 8 0.1	- 195.3	14 48.8	54 16.2
30	Moon I.U.	2.2	8 21 45.81		131.91	66.11	N. 21 20 54.0	- 275.2	14 51.0	54 24.4
	Moon I.L.	-	8 48 1.85		130.72	65.83	20 18 8.0	- 351.8	14 53.6	54 34.0
July 1	Moon I.U.	3.2	9 14 2.29		129.34	65.50	N. 19 0 28.4	- 424.0	14 56.7	54 45.2
	Moon I.L.	-	9 39 45.66		127.89	65.15	17 28 50.8	- 491.4	15 0.2	54 57.9
	8 Leonis -	6	9 30 54.58	.00			16 56			
	ψ Leonis -	6	9 37 40.76	.00			14 32			
2	Moon I.U.	4.2	10 5 11.93		126.51	64.82	N. 15 44 17.7	- 553.2	15 4.1	55 12.3
	Moon I.L.	-	10 30 22.58		125.30	64.53	13 47 57.3	- 609.2	15 8.5	55 28.3
	† Leonis -	6	10 26 16.07	- .01			14 42			
	Δ Leonis -	6	10 40 32.27	- .01			N. 14 47			

380 MOON-CULMINATING STARS, 1889.

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of R.A. for foll. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>' "</i>	<i>' "</i>
July 3	Moon I. v.	5.3	10 55 20.38		124.39	64.32	N. 11 41 1.2	- 659.1	15 13.3	55 45.9
	Moon I. L.	-	11 20 9.40		123.86	64.20	9 24 44.7	- 702.6	15 18.5	56 5.2
	♌ Virginis -	6	11 32 44.28	- .01			8 45			
4	♌ Virginis -	4½	11 39 33.95	- .01			8 53			
	Moon I. v.	6.3	11 44 54.79		123.80	64.21	N. 7 02.5	- 739.4	15 24.2	56 26.1
	Moon I. L.	-	12 9 42.67		124.28	64.36	4 29 26.6	- 769.2	15 30.4	56 48.6
5	♌ Virginis -	6	11 54 15.99	- .01			4 16			
	B.A.C. 4104	6½	12 55 59.63	- .01			4 40			
	Moon I. v.	7.4	12 34 39.96		125.37	64.67	N. 1 53 14.8	- 791.4	15 36.9	57 12.5
6	Moon I. L.	-	12 59 54.27		127.13	65.14	S. 0 46 34.5	- 805.3	15 43.7	57 37.5
	♌ Virginis -	6	12 47 30.75	- .01			2 57			
	46 Virginis -	6	12 54 53.59	- .01			2 46			
7	Moon I. v.	8.4	13 25 33.75		129.57	65.79	S. 3 28 16.3	- 810.0	15 50.8	58 3.3
	Moon I. L.	-	13 51 46.83		132.73	66.60	6 9 52.7	- 804.2	15 58.0	58 29.7
	B.A.C. 4647	6	13 49 10.09	- .01			7 31			
8	94 Virginis -	6	14 02 06.08	- .01			8 22			
	Moon I. v.	9.4	14 18 41.98		136.58	67.59	S. 8 49 10.4	- 786.6	16 5.2	58 56.2
	Moon I. L.	-	14 46 27.31		141.08	68.71	11 23 37.8	- 755.6	16 12.2	59 22.0
9	♌ Librae -	6	14 48 22.58	- .01			11 27			
	18 Librae -	6½	14 52 55.01	- .01			10 42			
	Moon I. v.	10.5	15 15 9.94		146.11	69.95	S. 13 50 24.5	- 709.6	16 19.0	59 46.7
10	Moon I. L.	-	15 44 55.25		151.49	71.24	16 6 22.2	- 647.2	16 25.2	60 9.6
	♌ Librae -	6	15 37 51.45	- .01			15 19			
	♌ Librae -	4½	15 47 32.06	.00			16 24			
11	Moon I. v.	11.5	16 15 45.89		156.95	72.54	S. 18 8 8.6	- 567.6	16 30.8	60 29.9
	Moon I. L.	-	16 47 40.82		162.13	73.74	19 52 15.1	- 470.6	16 35.4	60 46.9
	B.A.C. 5700	6½	16 50 34.25	.00			19 22			
12	29 Ophiuchi -	6	16 55 23.57	.00			18 43			
	Moon I. v.	12.6	17 20 34.28		166.63	74.77	S. 21 15 20.5	- 357.7	16 39.0	61 0.0
	Moon I. L.	-	17 54 15.41		170.00	75.53	22 14 27.2	- 231.4	16 41.3	61 8.5
13	15 Sagittarii -	5	18 8 37.55	+ .01			20 46			
	21 Sagittarii -	5	18 18 46.28	+ .01			20 36			
	Moon I. v.	13.6	18 28 28.39		171.88	75.94	S. 22 47 19.8	- 96.2	16 42.3	61 12.1
14	Moon I. L.	-	19 2 53.79		172.04	75.96	22 52 41.4	+ 42.7	16 41.8	61 10.5
	♏ Sagittarii -	4	18 58 3.89	+ .01			21 54			
	♏ Sagittarii -	3	19 3 11.86	+ .01			21 12			
15	Moon II. v.	14.6	19 39 41.65		170.35	75.58	S. 22 30 24.6	+ 179.2	16 40.0	61 3.7
	B.A.C. 6889	6	19 58 28.37	+ .02			21 38			
	17 Capricorni	6	20 39 45.83	+ .02			21 55			
16	Moon II. L.	-	20 13 27.93		167.11	74.84	S. 21 41 31.4	+ 307.8	16 36.8	60 52.0
	Moon II. v.	15.7	20 46 27.46		162.64	73.80	20 28 7.5	+ 423.7	16 32.3	60 35.5
	♐ Capricorni	4½	21 16 5.79	+ .02			17 18			
17	♐ Capricorni	4½	21 30 53.67	+ .02			8. 19 58			

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AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of *'s R.A. for full Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
<div style="display: flex; justify-content: space-between; font-weight: normal; font-size: small;"> h m s s s ° ' " N " " ° ' " N " " </div>										
July 14	Moon II.L.	-	21 18 27.90		157.34	72.57	S. 18 53 3.1	+ 524.1	16 26.7	60 15.0
	Moon II.U.	16.7	21 49 21.91		151.64	71.21	16 59 37.4	+ 607.2	16 20.2	59 51.1
	45 Aquarii -	6	22 13 4.98	+ .02			13 52			
	50 Aquarii -	6	22 18 31.97	+ .03			14 6			
15	Moon II.L.	-	22 19 7.11		145.92	69.83	S. 14 51 18.8	+ 673.0	16 13.0	59 24.7
	Moon II.U.	17.8	22 47 45.08		140.48	68.51	12 31 31.8	+ 722.2	16 5.3	58 56.5
	42 Aquarii -	5	23 13 12.46	+ .03			10 13			
	B.A.C. 8214	6½	23 29 49.29	+ .03			8 5			
16	Moon II.L.	-	23 15 20.37		135.50	67.26	S. 10 32 6.8	+ 756.3	15 57.3	58 27.3
	Moon II.U.	18.8	23 41 59.57		131.14	66.15	7 29 55.2	+ 776.9	15 49.2	57 57.7
	33 Piscium -	5	23 59 40.42	+ .03			6 20			
	B.A.C. 17 -	6	0 4 39.32	+ .03			5 52			
17	Moon II.L.	-	0 7 50.50		127.46	65.21	S. 4 53 27.5	+ 785.9	15 41.2	57 28.4
	Moon II.U.	19.8	0 33 1.44		124.48	64.43	S. 2 16 14.4	+ 784.7	15 33.5	57 0.0
	26 Ceti -	6½	0 58 7.04	+ .03			N. 0 6			
	33 Ceti -	6	1 4 51.62	+ .03			1 51			
18	Moon II.L.	-	0 57 40.91		122.21	63.84	N. 0 19 51.3	+ 774.9	15 26.1	56 32.9
	Moon II.U.	20.9	1 21 57.19		120.62	63.41	2 53 12.2	+ 757.4	15 19.2	56 7.6
	B.A.C. 481 -	6½	1 30 15.21	+ .03			7 5			
	7 Piscium -	4½	1 35 39.96	+ .03			4 56			
19	Moon II.L.	-	1 45 58.26		119.67	63.15	N. 5 22 21.8	+ 733.2	15 12.8	55 44.3
	Moon II.U.	21.9	2 9 51.58		119.32	63.05	7 46 3.8	+ 702.8	15 7.1	55 23.3
	ε Arietis -	5½	2 18 52.54	+ .03			10 6			
	B.A.C. 830 -	6	2 36 30.90	+ .03			10 16			
20	Moon II.L.	-	2 33 44.04		119.51	63.10	N. 10 3 6.8	+ 666.7	15 2.0	55 4.6
	Moon II.U.	22.9	2 57 41.82		120.19	63.26	12 12 23.6	+ 625.2	14 57.5	54 48.3
	B.A.C. 987 -	6½	3 5 16.57	+ .03			12 38			
	γ Tauri -	4	3 24 44.97	+ .03			12 33			
21	Moon II.L.	-	3 21 50.35		121.29	63.53	N. 14 12 49.0	+ 578.2	14 53.8	54 34.5
	Moon II.U.	24.0	3 46 14.14		122.72	63.90	16 3 18.6	+ 525.9	14 50.7	54 23.3
	B.A.C. 1240	6	3 54 25.06	+ .03			17 53			
	B.A.C. 1272	6	4 1 38.27	+ .03			17 3			
22	Moon II.L.	-	4 10 56.68		124.40	64.31	N. 17 42 48.5	+ 468.2	14 48.3	54 14.5
	Moon II.U.	25.0	4 36 0.27		126.22	64.77	19 10 15.3	+ 405.4	14 46.5	54 8.0
	δ Tauri -	5	4 56 27.54	+ .03			21 26			
	105 Tauri -	6	5 1 17.09	+ .03			21 33			
23	Moon II.L.	-	5 1 25.96		128.06	65.22	N. 20 24 37.6	+ 337.5	14 45.4	54 3.8
	Moon II.U.	26.0	5 27 13.39		129.82	65.65	21 24 56.2	+ 264.9	14 44.8	54 1.7
	χ ¹ Orionis -	4½	5 47 48.17	+ .02			20 15			
	7 Geminor. -	3½	6 8 10.21	+ .03			22 32			
24	Moon II.L.	-	5 53 20.75		131.37	66.02	N. 22 10 17.6	+ 188.0	14 44.8	54 1.6
	Moon II.U.	27.1	6 19 44.99		132.61	66.31	22 39 55.8	+ 107.8	14 45.3	54 3.4
25	Moon II.L.	-	6 46 21.89		133.46	66.51	N. 22 53 15.7	+ 25.1	14 46.2	54 6.8
	Moon II.U.	28.1	7 13 6.27		133.80	66.59	N. 22 49 53.9	- 58.9	14 47.6	54 11.9

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of *'s R.A. for full Day.	Var. of *'s R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of *'s Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			h m s	"	"	"	° ' "	"	"	"
July 26	Moon II.L.	-	7 39 52.66		133.79	66.56	N. 22 29 42.5	- 142.9	14 49.4	54 18.3
	Moon II.U.	29.1	8 6 35.43		133.27	66.42	21 52 48.7	- 225.7	14 51.5	54 26.1
27	Moon I.L.	-	8 30 57.21		132.40	66.18	N. 20 59 35.5	- 306.0	14 53.9	54 35.1
28	Moon I.U.	0.5	8 57 19.05		131.19	65.87	N. 19 50 40.5	- 382.5	14 56.7	54 45.2
	Moon I.L.	-	9 23 25.03		129.78	65.51	18 26 55.0	- 454.3	14 59.7	54 56.3
29	Moon I.U.	1.6	9 49 13.40		128.28	65.13	N. 16 49 20.6	- 520.5	15 3.1	55 8.5
	Moon I.L.	-	10 14 43.78		126.81	64.77	14 59 8.3	- 580.5	15 6.6	55 21.5
30	Moon I.U.	2.6	10 39 57.36		125.49	64.45	N. 12 57 35.2	- 633.8	15 10.4	55 35.3
	Moon I.L.	-	11 4 56.58		124.43	64.20	10 46 4.1	- 680.2	15 14.4	55 50.2
	B.A.C. 3845	6	11 10 9.84	- .01			13 27			
	Leonis	4	11 18 8.01	- .01			11 8			
31	Moon I.U.	3.6	11 29 45.13		123.73	64.04	N. 8 26 0.7	- 719.2	15 18.7	56 5.9
	Moon I.L.	-	11 54 27.80		123.46	64.01	5 58 54.1	- 750.6	15 23.2	56 22.5
	B.A.C. 3996	6	11 43 25.68	- .01			5 49			
	Virginis	6	11 54 15.77	- .01			4 16			
Aug. 1	Moon I.U.	4.7	12 19 10.24		123.70	64.11	N. 3 26 16.6	- 774.3	15 28.0	56 40.0
	Moon I.L.	-	12 43 58.97		124.52	64.36	N. 0 49 44.1	- 789.7	15 33.0	56 58.2
	38 Virginis	6	12 47 30.47	- .01			S. 2 57			
	46 Virginis	6	12 54 53.31	- .01			2 46			
2	Moon I.U.	5.7	13 9 1.10		125.95	64.77	S. 1 49 2.5	- 796.6	15 38.2	57 17.2
	Moon I.L.	-	13 34 24.25		128.02	65.34	4 28 16.0	- 794.1	15 43.6	57 36.9
	80 Virginis	6	13 29 45.28	- .01			4 50			
	B.A.C. 4572	6	13 38 7.82	- .01			4 56			
3	Moon I.U.	6.7	14 0 16.26		130.76	66.08	S. 7 6 0.0	- 781.5	15 49.1	57 57.2
	Moon I.L.	-	14 26 45.06		134.15	66.97	9 40 8.3	- 757.9	15 54.7	58 17.7
	2 Virginis	4½	14 6 59.22	- .01			9 45			
	Librae	6	14 48 22.28	- .02			11 27			
4	Moon I.U.	7.8	14 53 58.21		138.14	68.00	S. 12 8 22.0	- 722.2	16 0.3	58 38.3
	Moon I.L.	-	15 22 2.51		142.65	69.13	14 28 9.2	- 673.3	16 5.8	58 58.5
	1 Librae	6	15 14 50.09	- .02			15 9			
	Librae	4	15 22 1.05	- .01			16 20			
5	Moon I.U.	8.8	15 51 3.25		147.52	70.34	S. 16 36 44.7	- 610.2	16 11.2	59 18.2
	Moon I.L.	-	16 21 3.51		152.53	71.55	18 31 13.6	- 532.1	16 16.3	59 36.8
	χ Ophiuchi	6	16 20 36.87	- .01			18 12			
	24 Scorpii	5	16 35 10.72	- .01			17 32			
6	Moon I.U.	9.8	16 52 3.36		157.39	72.70	S. 20 8 35.9	- 439.1	16 20.9	59 53.7
	Moon I.L.	-	17 23 58.90		161.75	73.71	21 25 56.1	- 332.0	16 24.9	60 8.4
	B.A.C. 5866	6	17 18 5.11	- .01			21 20			
	B.A.C. 5954	6	17 32 6.85	- .01			21 51			
7	Moon I.U.	10.9	17 56 41.92		165.24	74.50	S. 22 20 35.5	- 212.7	16 28.2	60 20.4
	Moon I.L.	-	18 29 59.85		167.52	74.99	22 50 27.2	- 84.6	16 30.6	60 29.2
	μ Sagittarii	4	18 7 9.51	.00			21 5			
	B.A.C. 6343	6	18 31 47.71	.00			S. 23 36			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of R.A. for fol. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			^h ^m ^s	^s	^s	^s	[°] ['] ["]	["]	['] ["]	['] ["]
Aug. 8	Moon I. v.	11.9	19 3 36.60		168.34	75.15	S. 22 54 9.4	+ 48.0	16 32.0	60 34.3
	Moon I. L.	-	19 37 13.97		167.62	74.95	22 31 17.5	+ 180.1	16 32.3	60 35.4
	B.A.C. 6607	6	19 14 0.93	.00			22 37			
	B.A.C. 6878	6½	19 57 11.57	.00			22 54			
9	Moon I. v.	13.0	20 10 33.73		165.44	74.41	S. 21 42 27.8	+ 306.8	16 31.4	60 32.2
	Moon I. L.	-	20 43 19.53		162.01	73.58	20 29 15.2	+ 423.3	16 29.4	60 24.9
	♄ Capricorni	5½	20 58 7.47	+ .01			20 18			
	♄ Capricorni	6	21 3 14.84	+ .01			21 0			
10	Moon I. v.	14.0	21 15 18.43		157.68	72.54	S. 18 54 3.1	+ 526.2	16 26.2	60 13.3
	♄ Capricorni	3	21 40 57.00	+ .01			16 38			
	♄ Aquarii	6	21 56 24.35	+ .01			17 30			
11	Moon II. L.	-	21 48 44.48		152.61	71.36	S. 16 59 49.4	+ 613.3	16 22.0	59 57.9
	Moon II. v.	15.0	22 18 45.46		147.55	70.13	14 49 50.9	+ 683.6	16 16.9	59 39.0
	♄ Aquarii	6	22 42 41.89	+ .02			11 8			
	♄ Aquarii	6	22 47 40.16	+ .02			12 12			
12	Moon II. L.	-	22 47 46.06		142.60	68.91	S. 12 27 29.9	+ 737.2	16 10.9	59 17.2
	Moon II. v.	16.1	23 15 49.09		137.98	67.77	9 56 2.2	+ 774.8	16 4.3	58 53.1
	B.A.C. 8274	6	23 42 51.36	+ .02			7 0			
	♄ Piscium	5	23 56 17.92	+ .02			6 38			
13	Moon II. L.	-	23 42 59.48		133.85	66.73	S. 7 18 31.9	+ 797.9	15 57.3	58 27.2
	Moon II. v.	17.1	0 9 23.66		130.29	65.84	4 37 44.4	+ 808.0	15 50.0	58 0.4
	♄ Ceti	6½	0 32 25.77	+ .02			1 7			
	♄ Ceti	5½	0 47 21.67	+ .02			1 45			
14	Moon II. L.	-	0 35 8.91		127.36	65.09	S. 1 56 7.1	+ 806.5	15 42.5	57 33.2
	Moon II. v.	18.1	1 0 22.79		125.06	64.52	N. 0 44 11.0	+ 795.0	15 35.1	57 6.1
	B.A.C. 408	6½	1 16 59.90	+ .03			4 9			
	♄ Piscium	4½	1 35 40.74	+ .03			4 56			
15	Moon II. L.	-	1 25 12.97		123.40	64.10	N. 3 21 17.5	+ 774.8	15 28.0	56 39.8
	Moon II. v.	19.2	1 49 46.83		122.34	63.83	5 53 34.4	+ 746.9	15 21.1	56 14.8
	♄ Ceti	4½	2 7 8.32	+ .03			8 20			
	♄ Ceti	4	2 22 16.73	+ .03			7 58			
16	Moon II. L.	-	2 14 11.33		121.84	63.72	N. 8 19 35.4	+ 712.2	15 14.8	55 51.5
	Moon II. v.	20.2	2 38 33.05		121.86	63.74	10 38 3.2	+ 671.4	15 8.9	55 30.1
	B.A.C. 987	6½	3 5 17.41	+ .03			12 38			
	♄ Tauri	3½	3 21 10.23	+ .03			9 21			
17	Moon II. L.	-	3 2 57.81		122.34	63.88	N. 12 47 47.4	+ 625.0	15 3.7	55 11.0
	Moon II. v.	21.2	3 27 30.74		123.21	64.12	14 47 42.4	+ 573.3	14 59.1	54 54.2
	B.A.C. 1206	6	3 46 49.74	+ .03			17 0			
	B.A.C. 1240	6	3 54 25.90	+ .03			17 53			
18	Moon II. L.	-	3 52 16.13		124.40	64.44	N. 16 36 45.8	+ 516.5	14 55.3	54 40.1
	Moon II. v.	22.3	4 17 17.25		125.82	64.81	18 13 58.2	+ 454.8	14 52.2	54 28.6
	B.A.C. 1468	6	4 39 48.51	+ .03			18 32			
	♄ Tauri	5½	4 44 53.48	+ .03			N. 18 39			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass'd Merid.	Apparent Declination.	Var. of α 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Aug. 19	Moon II.L.	-	h m s		s	s	° ' "	+ "	' "	' "
	Moon II.U.	23.5	4 42 36.35		127.38	65.21	N. 19 38 21.8	+ 388.4	14 49.3	54 19.8
	ζ Tauri -	3½	5 8 14.44		128.97	65.61	20 49 1.7	+ 317.5	14 48.1	54 13.7
	B.A.C. 1801	6	5 31 1.23	+ .03			21 4			
			5 36 35.62	+ .03			23 9			
20	Moon II.L.	-	5 34 11.31		130.49	65.98	N. 21 45 6.4	+ 242.6	14 47.1	54 10.2
	Moon II.U.	24.3	6 0 25.45		131.83	66.30	22 25 30.0	+ 164.1	14 46.9	54 9.2
	η Geminor. -	3½	6 8 10.95	+ .03			22 32			
	μ Geminor. -	3	6 16 15.05	+ .03			22 34			
21	Moon II.L.	-	6 26 54.23		132.91	66.55	N. 22 50 32.8	+ 82.6	14 47.2	54 10.6
	Moon II.U.	25.4	6 53 33.88		133.64	66.71	22 58 45.1	- 0.9	14 48.3	54 14.4
	B.A.C. 2514	6½	7 32 29.38	+ .02			24 28			
	κ Geminor. -	3½	7 37 44.69	+ .02			24 40			
22	Moon II.L.	-	7 20 20.03		133.98	66.77	N. 22 50 8.2	- 85.4	14 49.9	54 20.2
	Moon II.U.	26.4	7 47 7.81		133.91	66.71	22 24 36.1	- 169.9	14 52.0	54 27.9
23	Moon II.L.	-	8 13 52.40		133.45	66.57	N. 21 42 17.0	- 253.0	14 54.5	54 37.3
	Moon II.U.	27.4	8 40 29.33		132.65	66.33	20 43 33.6	- 333.7	14 57.5	54 48.3
24	Moon II.L.	-	9 6 54.91		131.58	66.03	N. 19 29 2.8	- 410.7	15 0.8	55 0.4
	Moon II.U.	28.5	9 33 6.46		130.33	65.69	17 59 35.3	- 483.0	15 4.4	55 13.6
25	Moon II.L.	-	9 59 2.53		129.01	65.34	N. 16 16 12.7	- 549.7	15 8.3	55 27.6
26	Moon II.U.	29.5	10 24 42.93		127.74	65.00	N. 14 20 8.1	- 609.9	15 12.3	55 42.3
	Moon I.L.	-	10 47 59.39		126.65	64.70	12 12 42.9	- 663.0	15 16.4	55 57.4
27	Moon I.U.	1.0	11 13 13.47		125.75	64.48	N. 9 55 25.8	- 708.5	15 20.6	56 12.7
	Moon I.L.	-	11 38 18.64		125.17	64.34	7 29 51.7	- 745.8	15 24.8	56 28.1
28	Moon I.U.	2.0	12 3 19.22		125.00	64.33	N. 4 57 40.6	- 774.6	15 29.0	56 43.6
	Moon I.L.	-	12 28 20.46		125.29	64.43	N. 2 20 38.1	- 794.3	15 33.2	56 59.0
29	Moon I.U.	3.0	12 53 28.24		126.10	64.68	S. 0 19 26.3	- 804.8	15 37.3	57 14.1
	Moon I.L.	-	13 18 48.98		127.46	65.07	3 0 37.6	- 805.4	15 41.4	57 29.1
	80 Virginis -	6	13 29 44.99	- .01			4 50			
	B.A.C. 4572	6	13 38 7.51	- .01			4 56			
30	Moon I.U.	4.1	13 44 29.48		129.39	65.62	S. 5 40 55.2	- 795.7	15 45.5	57 43.9
	Moon I.L.	-	14 10 36.60		131.89	66.31	8 18 12.0	- 775.2	15 49.4	57 58.3
	95 Virginis -	6	14 0 50.87	- .01			8 47			
	106 Virginis -	6	14 22 51.00	- .01			6 24			
31	Moon I.U.	5.1	14 37 17.10		134.94	67.12	S. 10 50 14.3	- 743.2	15 53.2	58 12.3
	Moon I.L.	-	15 4 37.28		138.49	68.06	13 14 40.8	- 699.1	15 57.0	58 26.0
	6 ^a Libras -	6	15 16 51.00	- .02			14 44			
	7 ^a Libras -	4	15 22 0.65	- .02			16 20			
Sept. 1	Moon I.U.	6.1	15 32 42.43		142.42	69.08	S. 15 29 2.6	- 642.4	16 0.6	58 39.2
	Moon I.L.	-	16 1 36.35		146.59	70.14	17 30 45.8	- 572.6	16 4.0	58 51.7
	B.A.C. 5408	6½	16 8 16.39	- .02			18 15			
	χ Ophiuchi -	6	16 20 36.46	- .02			8. 18 12			

MOON-CULMINATING STARS, 1889. 38

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of *'s R.A. for foli. Day.	Var. of (s) R.A. in 1 hour of Long.	Sid. Time of Semid. passs Merid.	Apparent Declination.	Var. of (s) Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Sept. 2	Moon I. u.	7.2	h m s	s	s	s	° ' "	"	"	"
	Moon I. L.	-	16 31 20.80		150.80	71.18	8. 19 17 13.5	- 489.8	16 7.2	59 3.5
	B.A.C. 5758	6	17 1 54.69	- .02	154.79	72.15	20 45 51.0	- 394.4	16 10.2	59 14.4
	† Ophiuchi	5	16 59 35.70	- .02			21 25			
			17 14 22.58	- .02			21 0			
3	Moon I. u.	8.2	17 33 13.75		158.28	72.97	8.21 54 13.9	- 287.6	16 12.8	59 24.0
	Moon I. L.	-	18 5 10.22		160.98	73.60	22 40 17.0	- 171.5	16 15.0	59 32.3
	B.A.C. 6088	6	17 55 12.51	- .02			22 47			
	14 Sagittarii	6	18 7 37.67	- .01			21 45			
4	Moon I. u.	9.2	18 37 33.12		162.64	73.96	8.23 2 24.6	- 48.9	16 16.8	59 38.8
	Moon I. L.	-	19 10 8.91		163.11	74.04	22 59 39.9	+ 76.5	16 18.0	59 43.2
	o Sagittarii	4	18 58 3.72	- .01			21 54			
	π Sagittarii	3	19 3 11.71	- .01			21 12			
5	Moon I. u.	10.3	19 42 42.85		162.33	73.82	8.22 31 52.0	+ 200.9	16 18.6	59 45.4
	Moon I. L.	-	20 15 0.31		160.39	73.32	21 39 38.4	+ 320.2	16 18.5	59 45.0
	σ Capricorni	5½	20 13 1.63	- .01			19 28			
	B.A.C. 7049	6	20 23 2.81	- .01			22 46			
6	Moon I. u.	11.3	20 46 48.34		157.47	72.59	8.20 24 22.8	+ 430.7	16 17.7	59 42.0
	Moon I. L.	-	21 17 56.71		153.83	71.67	18 48 8.2	+ 529.6	16 16.1	59 36.0
	ε Capricorni	4½	21 16 6.25	.00			17 18			
	ε Capricorni	4½	21 30 54.22	.00			19 58			
7	Moon I. u.	12.4	21 48 18.48		149.75	70.66	8.16 53 27.4	+ 614.8	16 13.6	59 27.1
	Moon I. L.	-	22 17 50.13		145.52	69.59	14 43 12.1	+ 685.2	16 10.4	59 15.3
	45 Aquarii	6	22 13 5.70	.00			13 52			
	50 Aquarii	6	22 18 32.72	.00			14 6			
8	Moon I. u.	13.4	22 46 31.24		141.37	68.54	8.12 20 23.4	+ 740.4	16 6.4	59 0.8
	ψ¹ Aquarii	4½	23 10 6.85	+ .01			9 42			
	B.A.C. 8214	6½	23 29 50.33	+ .01			8 5			
9	Moon I. L.	-	23 14 23.93		137.48	67.55	8. 9 48 2.7	+ 780.6	16 1.9	58 44.0
	Moon II. u.	14.5	23 43 45.55		133.85	66.67	7 9 4.6	+ 806.7	15 56.7	58 24.9
	B.A.C. 17	6	0 4 40.47	+ .01			5 52			
	B.A.C. 81	6½	0 18 51.14	+ .01			2 50			
10	Moon II. L.	-	0 10 13.24		130.86	65.90	8. 4 26 14.2	+ 819.5	15 51.0	58 4.2
	Moon II. u.	15.5	0 36 8.28		128.41	65.27	8. 1 42 3.8	+ 820.3	15 45.0	57 42.2
	26 Ceti	6½	0 58 8.36	+ .02			N. 0 46			
	33 Ceti	6	1 4 52.96	+ .02			1.51			
11	Moon II. L.	-	1 1 37.21		126.51	64.79	N. 1 1 9.0	+ 810.1	15 38.8	57 19.4
	Moon II. u.	16.5	1 26 46.60		125.15	64.46	3 41 19.6	+ 790.1	15 32.5	56 56.4
	π Piscium	4½	1 35 41.38	+ .02			4 56			
	64 Ceti	6	2 5 31.33	+ .02			8 3			
12	Moon II. L.	-	1 51 42.87		124.32	64.26	N. 6 16 37.1	+ 761.4	15 26.2	56 33.4
	Moon II. u.	17.5	2 16 32.14		123.97	64.20	8 45 22.5	+ 724.9	15 20.2	56 11.2
	ξ² Ceti	4	2 22 17.45	+ .02			7 58			
	B.A.C. 830	6	2 36 32.07	+ .02			N. 10 16			

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AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Sept. 13	Moon II.L.	-	h m s							
	Moon II.U.	18.6	2 41 19.94		124.07	64.26	N. 11 6 6.5	+ 681.3	15 14.4	55 50.0
	B.A.C. 1119	6	3 6 11.30		124.55	64.42	13 17 29.1	+ 631.4	15 9.0	55 30.3
	B.A.C. 1206	6	3 33 11.22	+ .02			16 10			
14	B.A.C. 1206	6	3 46 50.54	+ .03			17 0			
	Moon II.L.	-	3 31 10.43		125.35	64.66	N. 15 18 17.4	+ 575.7	15 4.1	55 12.3
	Moon II.U.	19.6	3 56 20.76		126.40	64.97	17 7 24.9	+ 514.7	14 59.8	54 56.5
	e Tauri - -	3½	4 22. 9.71	+ .03			18 56			
15	B.A.C. 1468	6	4 39 49.34	+ .03			18 32			
	Moon II.L.	-	4 21 44.79		127.62	65.31	N. 18 43 50.4	+ 448.8	14 56.1	54 43.0
	Moon II.U.	20.6	4 47 23.97		128.91	65.67	20 6 38.0	+ 378.4	14 53.1	54 31.9
	105 Tauri - -	6	5 1 18.78	+ .03			21 33			
16	a Tauri - -	6	5 12 37.95	+ .03			21 59			
	Moon II.L.	-	5 13 18.69		130.20	66.02	N. 21 14 57.1	+ 304.1	14 50.8	54 23.5
	Moon II.U.	21.7	5 39 28.27		131.38	66.33	22 8 3.3	+ 226.3	14 49.2	54 17.9
	7 Geminor. -	3½	6 8 11.78	+ .03			22 32			
17	4 Geminor. -	3	6 16 15.87	+ .03			22 34			
	Moon II.L.	-	6 5 50.96		132.37	66.59	N. 22 45 17.7	+ 145.6	14 48.5	54 15.0
	Moon II.U.	22.7	6 32 24.08		133.11	66.77	23 6 10.2	+ 62.8	14 48.4	54 14.9
	44 Geminor. -	6½	6 58 38.46	+ .03			22 48			
18	48 Geminor. -	6	7 5 42.63	+ .03			24 19			
	Moon II.L.	-	6 59 4.27		133.54	66.87	N. 23 10 19.5	- 21.4	14 49.1	54 17.5
	Moon II.U.	23.7	7 25 47.66		133.64	66.87	22 57 34.5	- 106.1	14 50.6	54 22.8
	7 Cancri - -	6½	7 57 17.89	+ .03			22 23			
19	B.A.C. 2788	6	8 13 53.65	+ .02			21 6			
	Moon II.L.	-	7 52 30.25		133.41	66.79	N. 22 27 54.9	- 190.3	14 52.7	54 30.6
	Moon II.U.	24.8	8 19 8.24		132.88	66.62	21 41 32.7	- 273.1	14 55.5	54 40.8
	B.A.C. 2854	6	8 25 19.64	+ .02			19 22			
20	39 Cancri - -	6	8 33 43.73	+ .02			20 24			
	Moon II.L.	-	8 45 38.30		132.10	66.39	N. 20 38 50.9	- 353.4	14 58.8	54 53.1
	Moon II.U.	25.8	9 11 57.87		131.14	66.10	19 20 25.3	- 430.3	15 2.7	55 7.2
	8 Leonis - -	6	9 30 55.29	+ .02			16 56			
21	ψ Leonis - -	6	9 37 41.40	+ .02			14 32			
	Moon II.L.	-	9 38 5.36		130.10	65.79	N. 17 47 1.9	- 502.8	15 7.0	55 23.0
	Moon II.U.	26.8	10 4 0.23		129.06	65.49	15 59 38.3	- 570.2	15 11.7	55 40.2
	Moon II.L.	-	10 29 43.11		128.11	65.22	N. 13 59 22.2	- 631.5	15 16.6	55 58.2
22	Moon II.U.	27.9	10 55 15.70		127.36	64.99	11 47 30.3	- 686.0	15 21.7	56 17.0
	Moon II.L.	-	11 20 40.76		126.87	64.85	N. 9 25 29.5	- 732.8	15 26.9	56 36.0
	Moon II.U.	28.9	11 46 1.98		126.73	64.80	6 54 55.3	- 771.4	15 32.1	56 55.0
	Moon II.L.	-	12 11 23.89		127.00	64.86	N. 4 17 31.8	- 800.9	15 37.2	57 13.5
23	Moon I. U.	0.4	12 34 41.55		127.67	65.05	N. 1 35 12.4	- 820.6	15 42.0	57 31.3
	Moon I. L.	-	13 0 20.25		128.86	65.38	S. 1 10 1.5	- 829.8	15 46.6	57 48.2
	Moon I. U.	1.4	13 26 16.31		130.57	65.85	S. 3 55 58.8	- 827.8	15 50.9	58 3.8
	Moon I. L.	-	13 52 35.90		132.78	66.45	S. 6 40 20.7	- 813.8	15 54.8	58 18.1

MOON-CULMINATING STARS, 1889. 38.

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of *3 R.A. for Feb. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^t Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			h m s	"	"	"	° ' "	"	' "	' "
Sept. 27	Moon I. u.	2.5	14 19 25.07		135.49	67.18	S. 9 20 40.6	- 787.3	15 58.2	58 30.7
	Moon I. L.	-	14 46 49.44		138.64	68.02	11 54 24.5	- 747.7	16 1.3	58 41.8
	ε ¹ Libræ - -	6	14 48 21.56	- .01			11 27			
	18 Libræ - -	6½	14 52 53.99	- .01			10 42			
28	Moon I. u.	3.5	15 14 53.75		142.13	68.93	S. 14 18 53.0	- 694.7	16 3.9	58 51.3
	Moon I. L.	-	15 43 41.35		145.83	69.90	16 31 24.5	- 628.2	16 6.0	58 59.0
	θ Libræ - -	4½	15 47 30.97	- .01			16 24			
	49 Libræ - -	5½	15 54 6.25	- .01			16 12			
29	Moon I. u.	4.5	16 13 13.70		149.56	70.85	S. 18 29 17.6	- 548.4	16 7.7	59 5.2
	Moon I. L.	-	16 43 29.91		153.09	71.74	20 9 57.3	- 456.2	16 8.9	59 9.8
	B.A.C. 5580	6	16 35 22.69	- .02			19 43			
	B.A.C. 5663	6½	16 46 52.55	- .02			20 14			
30	Moon I. u.	5.6	17 14 26.15		156.19	72.51	S. 21 31 1.1	- 352.7	16 9.8	59 13.0
	Moon I. L.	-	17 45 55.64		158.59	73.11	22 30 26.7	- 240.2	16 10.3	59 14.9
	B.A.C. 5954	6	17 32 5.98	- .02			21 51			
	58 Ophiuchi -	5	17 36 47.76	- .02			21 38			
Oct. 1	Moon I. u.	6.6	18 17 48.77		160.09	73.47	S. 23 6 40.8	- 121.3	16 10.4	59 15.4
	Moon I. L.	-	18 49 53.70		160.54	73.57	23 18 45.0	+ 0.9	16 10.2	59 14.6
	B.A.C. 6343	6	18 31 46.93	- .02			23 36			
	28 Sagittarii -	6	18 39 40.66	- .02			22 30			
2	Moon I. u.	7.7	19 21 57.39		159.89	73.40	S. 23 6 20.9	+ 122.8	16 9.7	59 12.6
	Moon I. L.	-	19 53 46.83		158.18	72.98	22 29 53.0	+ 241.0	16 8.8	59 9.3
	B.A.C. 6727	6½	19 33 28.80	- .02			23 41			
	B.A.C. 6889	6	19 58 28.09	- .01			21 38			
3	Moon I. u.	8.7	20 25 10.27		155.59	72.32	S. 21 30 24.5	+ 352.4	16 7.5	59 4.6
	Moon I. L.	-	20 55 58.24		152.31	71.49	20 9 33.7	+ 454.3	16 5.9	58 58.8
	20 Capricorni	6	20 53 19.81	- .01			19 28			
	7 Capricorni	5½	20 58 7.21	- .01			20 18			
4	Moon I. u.	9.7	21 26 4.06		148.61	70.56	S. 18 29 25.4	+ 545.0	16 3.9	58 51.6
	Moon I. L.	-	21 55 24.08		144.72	69.56	16 32 23.7	+ 623.1	16 1.6	58 42.9
	8 Capricorni	3	21 40 56.92	- .01			16 38			
	29 Aquarii -	6	21 56 24.36	- .01			17 30			
5	Moon I. u.	10.8	22 23 57.49		140.87	68.56	S. 14 21 3.2	+ 688.1	15 58.8	58 32.8
	Moon I. L.	-	22 51 45.78		137.23	67.61	11 58 3.5	+ 739.7	15 55.7	58 21.3
	74 Aquarii -	6	22 47 40.41	.00			12 12			
	ψ ¹ Aquarii -	4½	23 10 6.88	.00			9 42			
6	Moon I. u.	11.8	23 18 52.40		133.94	66.74	S. 9 26 3.2	+ 778.2	15 52.1	58 8.4
	Moon I. L.	-	23 45 22.07		131.09	65.98	6 47 37.1	+ 804.1	15 48.2	57 54.1
	B.A.C. 8274	6	23 42 51.87	.00			7 0			
	30 Piscium -	5	23 56 18.50	.00			6 38			
7	Moon I. u.	12.9	0 11 20.43		128.73	65.35	S. 4 5 13.4	+ 817.9	15 44.0	57 38.6
	Moon I. L.	-	0 36 53.57		126.88	64.86	1 21 12.8	+ 820.4	15 39.5	57 22.1
	15 Ceti - -	6½	0 32 26.51	.00			1 7			

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AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^s Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour. of Long.	Semidiameter.	Hor. Par.
Oct. 8	Moon I. u.	13.9	h m s 1 2 7.68	s +01	s 125.56	s 64.51	N. 1 22 13.3	+ 812.2	15 34.8	57 4.7
	B.A.C. 408 -	6½	1 17 0.84	+01			4 9			
	♂ Piscium -	4½	1 35 41.77	+01			4 56			
9	Moon II. L.	-	1 29 17.52		124.71	64.30	N. 4 3 1.3	+ 794.2	15 29.9	56 46.7
	Moon II. u.	14.9	1 54 11.65		124.38	64.22	6 39 16.4	+ 766.9	15 24.9	56 28.4
	♂ Ceti -	4	2 7 9.47	+01			8 20			
	♂ Ceti -	4½	2 22 17.94	+02			7 58			
10	Moon II. L.	-	2 19 4.44		124.48	64.26	N. 9 9 12.7	+ 731.1	15 19.8	56 10.0
	Moon II. u.	16.0	2 44 0.74		124.96	64.41	11 31 11.7	+ 687.5	15 14.9	55 52.0
	B.A.C. 987 -	6½	3 5 18.78	+01			12 38			
	f Tauri -	4	3 24 47.23	+02			12 33			
11	Moon II. L.	-	3 9 4.63		125.74	64.64	N. 13 43 42.5	+ 636.5	15 10.2	55 34.6
	Moon II. u.	17.0	3 34 19.39		126.75	64.95	15 45 22.3	+ 579.0	15 5.7	55 18.2
	B.A.C. 1240	6	3 54 27.44	+02			17 53			
	B.A.C. 1272	6	4 1 40.65	+03			17 3			
12	Moon II. L.	-	3 59 47.34		127.92	65.29	N. 17 34 55.6	+ 515.6	15 1.6	55 3.0
	Moon II. u.	18.0	4 25 29.83		129.16	65.65	19 11 14.1	+ 446.7	14 57.8	54 49.4
	♂ Tauri -	5½	4 44 55.12	+03			18 39			
	♂ Tauri -	5	4 56 30.04	+02			21 26			
13	Moon II. L.	-	4 51 27.07		130.37	66.00	N. 20 33 17.8	+ 373.2	14 54.6	54 37.7
	Moon II. u.	19.1	5 17 38.25		131.47	66.33	21 40 14.7	+ 295.7	14 52.0	54 28.0
	B.A.C. 1835	6½	5 41 46.87	+03			20 50			
	♂ Orionis -	4½	5 47 50.60	+03			20 15			
14	Moon II. L.	-	5 44 1.50		132.37	66.59	N. 22 31 22.2	+ 215.1	14 50.0	54 20.7
	Moon II. u.	20.1	6 10 34.11		133.01	66.79	23 6 7.3	+ 132.1	14 48.7	54 15.9
	B.A.C. 2154	6½	6 30 41.56	+03			24 41			
	B.A.C. 2238	6	6 45 18.25	+03			23 44			
15	Moon II. L.	-	6 37 12.62		133.35	66.90	N. 23 24 7.7	+ 47.8	14 48.1	54 13.6
	Moon II. u.	21.1	7 3 53.25		133.36	66.92	23 25 11.4	- 37.2	14 48.2	54 14.2
	B.A.C. 2514	6½	7 32 30.99	+03			24 28			
	♂ Geminor. -	3½	7 37 46.29	+03			24 40			
16	Moon II. L.	-	7 30 32.07		133.05	66.85	N. 23 9 17.1	- 121.7	14 49.1	54 17.5
	Moon II. u.	22.2	7 57 5.34		132.45	66.69	22 36 34.5	- 205.1	14 50.8	54 23.5
	B.A.C. 2788	6	8 13 54.47	+03			21 6			
	B.A.C. 2854	6	8 25 20.41	+03			19 22			
17	Moon II. L.	-	8 23 29.98		131.62	66.47	N. 21 47 23.2	- 286.4	14 53.2	54 32.4
	Moon II. u.	23.2	8 49 43.58		130.63	66.20	20 42 12.1	- 364.9	14 56.4	54 44.0
	80 Cancri -	6½	9 5 43.58	+03			18 30			
	83 Cancri -	6	9 12 48.05	+03			18 10			
18	Moon II. L.	-	9 15 44.70		129.56	65.90	N. 19 21 38.6	- 440.0	15 0.2	54 58.1
	Moon II. u.	24.2	9 41 33.00		128.50	65.60	17 46 28.2	- 511.0	15 4.7	55 14.6
	42 Leonis -	6	10 15 52.81	+02			15 32			
	B.A.C. 3579	6	10 22 53.32	+02			N. 14 55			

MOON-CULMINATING STARS, 1889. 389

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>o</i>	<i>s</i>	<i>o' "</i>	<i>"</i>	<i>" "</i>	<i>" "</i>
Oct. 19	Moon II.L.	-	10 7 9.25		127.56	65.32	N. 15 57 33.6	- 577.3	15 9.8	55 33.5
	Moon II.v.	25.3	10 32 35.34		126.82	65.09	13 55 55.1	- 638.2	15 15.4	55 53.8
	β Leonis -	5	10 43 25.84	+ .02			11 8			
	γ Leonis -	4	11 18 8.54	+ .02			11 8			
20	Moon II.L.	-	10 57 54.16		126.37	64.94	N. 11 42 40.4	- 693.2	15 21.4	56 15.8
	Moon II.v.	26.3	11 23 9.52		126.26	64.87	9 19 5.7	- 741.4	15 27.7	56 39.0
	ν Virginis -	4½	11 40 9.60	+ .02			7 9			
	π Virginis -	4½	11 55 11.36	+ .02			7 14			
21	Moon II.L.	-	11 48 26.09		126.58	64.93	N. 6 46 36.3	- 782.1	15 34.2	57 2.8
	Moon II.v.	27.3	12 13 49.29		127.37	65.11	4 6 48.3	- 814.4	15 40.8	57 26.8
22	Moon II.L.	-	12 39 25.03		128.68	65.42	N. 1 21 29.3	- 837.1	15 47.2	57 50.4
	Moon II.v.	28.4	13 5 19.67		130.53	65.89	S. 1 27 19.3	- 849.1	15 53.5	58 13.2
23	Moon II.L.	-	13 31 39.82		132.93	66.50	S. 4 17 22.2	- 849.3	15 59.3	58 34.6
	Moon II.v.	29.4	13 58 31.99		135.86	67.25	7 6 9.9	- 836.4	16 4.6	58 54.1
24	Moon I.L.	-	14 23 46.07		139.12	68.13	S. 9 50 58.5	- 809.3	16 9.3	59 11.5
25	Moon I.v.	0.9	14 51 57.96		142.92	69.10	S. 12 28 51.6	- 767.0	16 13.3	59 25.8
	Moon I.L.	-	15 20 57.14		146.98	70.13	14 56 44.0	- 709.0	16 16.4	59 37.4
26	Moon I.v.	2.0	15 50 45.67		151.11	71.17	S. 17 11 25.6	- 635.2	16 18.7	59 45.8
	Moon I.L.	-	16 21 22.95		155.06	72.16	19 9 49.3	- 546.2	16 20.2	59 51.0
27	Moon I.v.	3.0	16 52 45.17		158.55	73.03	S. 20 49 0.1	- 443.4	16 20.7	59 53.1
	Moon I.L.	-	17 24 45.04		161.28	73.71	22 6 25.3	- 329.1	16 20.5	59 52.1
	B.A.C. 5954	6	17 32 5.58	- .01			21 51			
	δ Ophiuchi -	5	17 36 47.36	- .01			21 38			
28	Moon I.v.	4.0	17 57 11.88		163.00	74.15	S. 23 0 4.9	- 206.4	16 19.5	59 48.9
	Moon I.L.	-	18 29 52.30		163.52	74.30	23 28 40.8	- 79.2	16 17.8	59 42.4
29	α Sagittarii -	5	18 18 45.04	- .01			20 36			
	B.A.C. 6343	6	18 31 46.47	- .01			23 36			
29	Moon I.v.	5.1	19 2 31.38		162.77	74.14	S. 23 31 43.3	+ 48.5	16 15.6	59 34.2
	Moon I.L.	-	19 34 54.11		160.82	73.69	23 9 31.8	+ 172.5	16 12.9	59 24.5
	B.A.C. 6576	6	19 8 48.37	- .02			24 22			
	B.A.C. 6607	6	19 13 59.79	- .02			22 37			
30	Moon I.v.	6.1	20 6 46.97		157.84	72.99	S. 22 23 11.1	+ 289.4	16 9.8	59 12.9
	Moon I.L.	-	20 37 59.09		154.08	72.07	21 14 24.0	+ 396.5	16 6.4	59 0.5
	σ Capricorni	5½	20 13 0.81	- .02			19 28			
	B.A.C. 7049	6	20 23 1.99	- .01			22 46			
31	Moon I.v.	7.1	21 8 22.93		149.84	71.03	S. 19 45 20.8	+ 491.9	16 2.8	58 47.3
	Moon I.L.	-	21 37 54.51		145.41	69.93	17 58 28.7	+ 574.6	15 58.9	58 33.3
	ι Capricorni	4½	21 16 5.61	- .01			17 18			
	γ Capricorni	3½	21 33 58.26	- .01			17 10			
Nov. 1	Moon I.v.	8.2	22 6 33.08		141.05	68.81	S. 15 56 23.0	+ 644.2	15 55.0	58 19.0
	Moon I.L.	-	22 34 20.63		136.94	67.74	13 41 40.0	+ 700.9	15 51.1	58 4.4
	δ Aquarii -	6	22 13 5.27	- .01			13 52			
	B.A.C. 7835	6½	22 24 7.19	- .01			S. 13 29			

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AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α & δ for fol. Day.	Var. of α & δ in 1 hour of Long.	Sid. Time of Semi-d. pass Merid.	Apparent Declination.	Var. of δ in 1 hour of Long.	Semidiameter.	Hor. Par.
			$^{\circ}$ $'$ $''$ $'''$	$''$	$''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$''$	$''$	$''$
Nov. 2	Moon I. v.	9.2	23 1 21.19		133.24	66.76	S. 11 16 51.7	+ 745.2	15 47.0	57 49.6
	Moon I. L.	-	23 27 40.29		130.04	65.90	8 44 23.5	+ 777.6	15 43.0	57 34.7
	ψ^1 Aquarii -	4 $\frac{1}{2}$	23 10 6.67	- .01			9 42			
	B.A.C. 8214	6 $\frac{1}{2}$	23 29 50.25	- .01			8 5			
3	Moon I. v.	10.3	23 53 24.33		127.40	65.17	S. 6 6 33.2	+ 799.0	15 38.9	57 19.7
	Moon I. L.	-	0 18 40.21		125.34	64.60	3 25 30.6	+ 809.8	15 34.8	57 4.7
	B.A.C. 81 -	6 $\frac{1}{2}$	0 18 51.29	.00			2 50			
	14 Ceti -	6 $\frac{1}{2}$	0 29 53.33	- .01			1 7			
4	Moon I. v.	11.3	0 43 34.91		123.87	64.18	S. 0 43 18.1	+ 810.7	15 30.6	56 49.6
	Moon I. L.	-	1 8 15.38		122.97	63.91	N. 1 58 7.7	+ 802.1	15 26.5	56 34.5
	33 Ceti -	6	1 4 53.35	.00			1 51			
	\mathcal{J} Piscium -	5 $\frac{1}{2}$	1 12 6.99	.00			3 2			
5	Moon I. v.	12.3	1 32 48.21		122.59	63.80	N. 4 36 56.2	+ 784.5	15 22.4	56 19.5
	Moon I. L.	-	1 57 19.54		122.71	63.81	7 11 21.3	+ 758.3	15 18.4	56 4.6
	\circ Piscium -	4	1 39 34.67	+ .01			8 36			
	64 Ceti -	6	2 5 32.04	.00			8 3			
6	Moon I. v.	13.4	2 21 54.90		123.25	63.95	N. 9 39 41.7	+ 723.7	15 14.4	55 49.9
	Moon I. L.	-	2 46 39.08		124.17	64.19	12 0 19.1	+ 681.2	15 10.4	55 35.6
	38 Arietis -	5	2 38 57.60	+ .01			11 59			
	B.A.C. 987 -	6 $\frac{1}{2}$	3 5 19.17	+ .01			12 38			
7	Moon II. v.	14.4	3 13 45.07		125.42	64.52	N. 14 11 40.7	+ 631.2	15 6.7	55 21.7
	B.A.C. 1119	6	3 33 12.36	+ .01			16 10			
	B.A.C. 1206	6	3 46 51.76	+ .01			17 0			
8	Moon II. L.	-	3 38 58.43		126.84	64.90	N. 16 12 18.2	+ 573.9	15 3.0	55 8.2
	Moon II. v.	15.4	4 4 29.32		128.33	65.31	18 0 48.7	+ 510.1	14 59.6	54 55.7
	δ^1 Tauri -	4	4 16 34.94	+ .02			17 17			
	ϵ Tauri -	3 $\frac{1}{2}$	4 22 11.08	+ .02			18 56			
9	Moon II. L.	-	4 30 18.21		129.81	65.72	N. 19 35 56.8	+ 440.3	14 56.4	54 44.1
	Moon II. v.	16.5	4 56 24.32		131.18	66.11	20 56 35.4	+ 365.3	14 53.6	54 33.7
	114 Tauri -	6	5 21 0.96	+ .02			21 50			
	ζ Tauri -	3 $\frac{1}{2}$	5 31 3.68	+ .02			21 4			
10	Moon II. L.	-	5 22 45.61		132.33	66.44	N. 22 1 47.1	+ 286.0	14 51.1	54 24.8
	Moon II. v.	17.5	5 49 18.91		133.16	66.70	22 50 47.0	+ 203.5	14 49.1	54 17.4
	η Geminor. -	3 $\frac{1}{2}$	6 8 13.46	+ .03			22 32			
	μ Geminor. -	3	6 16 17.57	+ .03			22 34			
11	Moon II. L.	-	6 16 0.11		133.63	66.86	N. 23 23 1.9	+ 118.8	14 47.6	54 11.8
	Moon II. v.	18.5	6 42 44.54		133.70	66.91	23 38 13.1	+ 33.0	14 46.6	54 8.2
	δ Geminor. -	3 $\frac{1}{2}$	7 13 32.22	+ .03			22 11			
	63 Geminor. -	5 $\frac{1}{2}$	7 21 11.55	+ .03			21 40			
12	Moon II. L.	-	7 9 27.25		133.35	66.86	N. 23 36 15.0	- 52.6	14 46.2	54 6.9
	Moon II. v.	19.6	7 36 3.49		132.63	66.71	23 17 15.5	- 137.0	14 46.5	54 7.9
	μ^1 Cancri -	6	7 59 45.76	+ .03			22 57			
	B.A.C. 2788	6	8 13 55.36	+ .03			N. 21 6			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Cor. of $\frac{1}{2}$ R.A. for foll. Day.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass ^d Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			h m s	"	"	"	° ' "	"	' "	' "
Nov. 13	Moon II.L.	-	8 2 29.07		131° 59'	66° 47'	N. 22 41 34.3	- 219° 4'	14 47.5	54 11.4
	Moon II.U.	20.6	8 28 40.65		130° 32'	66° 17'	21 49 42.0	- 298° 8'	14 49.1	54 17.5
	80 Cancri	6½	9 5 44.44	+ °03			18 30			
	83 Cancri	6	9 12 48.91	+ °03			18 10			
14	Moon II.L.	-	8 54 36.11		128° 91'	65° 81'	N. 20 42 17.2	- 374° 7'	14 51.5	54 26.3
	Moon II.U.	21.6	9 20 14.47		127° 49'	65° 45'	19 20 5.7	- 446° 5'	14 54.7	54 37.9
	8 Leonis	6	9 30 56.82	+ °03			16 56			
	7 Leonis	3½	10 1 18.31	+ °03			17 18			
25	Moon II.L.	-	9 45 36.12		126° 14'	65° 10'	N. 17 43 58.1	- 514° 0'	14 58.6	54 52.1
	Moon II.U.	22.7	10 10 42.69		124° 99'	64° 79'	15 54 49.3	- 576° 7'	15 3.2	55 9.1
	i Leonis	6	10 26 17.71	+ °03			14 42			
	h Leonis	6	10 40 33.75	+ °03			14 47			
26	Moon II.L.	-	10 35 37.10		124° 13'	64° 55'	N. 13 53 38.0	- 634° 4'	15 8.5	55 28.6
	Moon II.U.	23.7	11 0 23.25		123° 63'	64° 39'	11 41 26.0	- 686° 7'	15 14.5	55 50.3
	e Virginis	6	11 32 45.17	+ °03			8 45			
	ξ Virginis	4½	11 39 34.78	+ °02			8 53			
27	Moon II.L.	-	11 25 6.04		123° 58'	64° 36'	N. 9 19 20.5	- 733° 2'	15 21.0	56 14.3
	Moon II.U.	24.7	11 49 51.33		124° 05'	64° 45'	6 48 34.6	- 773° 3'	15 28.0	56 40.0
	B.A.C. 4104	6½	12 6 0.19	+ °02			4 40			
	c Virginis	5	12 14 43.56	+ °02			3 56			
18	Moon II.L.	-	12 14 45.54		125° 09'	64° 70'	N. 4 10 29.4	- 806° 3'	15 35.4	57 7.0
	Moon II.U.	25.8	12 39 55.83		126° 74'	65° 10'	N. 1 26 36.6	- 831° 1'	15 43.1	57 35.1
	38 Virginis	6	12 47 30.91	+ °02			8. 2 57			
	46 Virginis	6	12 54 53.68	+ °02			2 46			
19	Moon II.L.	-	13 5 29.75		129° 03'	65° 68'	8. 1 21 18.5	- 846° 4'	15 50.8	58 3.4
	Moon II.U.	26.8	13 31 35.17		131° 99'	66° 41'	4 11 14.2	- 850° 9'	15 58.4	58 31.4
20	Moon II.L.	-	13 58 20.00		135° 59'	67° 32'	8. 7 0 51.0	- 842° 9'	16 5.8	58 58.5
	Moon II.U.	27.8	14 25 51.77		139° 80'	68° 36'	9 47 28.1	- 820° 7'	16 12.8	59 23.9
21	Moon II.L.	-	14 54 17.12		144° 50'	69° 53'	8. 12 28 5.3	- 782° 7'	16 19.1	59 47.0
	Moon II.U.	28.9	15 23 41.17		149° 55'	70° 77'	14 59 23.3	- 727° 3'	16 24.5	60 7.0
22	Moon II.L.	-	15 54 6.63		154° 69'	72° 02'	8. 17 17 49.2	- 653° 9'	16 29.0	60 23.3
23	Moon I. U.	0.4	16 23 6.42		159° 43'	73° 21'	8. 19 19 45.5	- 562° 5'	16 32.3	60 35.5
	Moon I. L.	-	16 55 26.47		163° 79'	74° 26'	21 1 42.1	- 454° 2'	16 34.4	60 43.2
24	Moon I. U.	1.5	17 28 33.37		167° 17'	75° 07'	8. 22 20 31.1	- 331° 8'	16 35.2	60 46.3
	Moon I. L.	-	18 2 13.18		169° 21'	75° 57'	23 13 44.8	- 199° 1'	16 34.8	60 44.8
25	Moon I. U.	2.5	18 36 8.33		169° 69'	75° 70'	8. 23 39 49.4	- 61° 2'	16 33.2	60 38.9
	Moon I. L.	-	19 9 59.35		168° 53'	75° 46'	23 38 14.8	+ 76° 5'	16 30.5	60 29.0
26	Moon I. U.	3.6	19 43 27.01		165° 84'	74° 85'	8. 23 9 35.8	+ 208° 6'	16 26.9	60 15.6
	Moon I. L.	-	20 16 14.57		161° 90'	73° 95'	22 15 26.6	+ 330° 9'	16 22.4	59 59.3
	4 Capricorni	6	20 11 31.19	- °01			22 9			
	B.A.C. 7049	6	20 23 1.63	- °01			8. 22 46			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α , R.A. for full Day.	Var. of α 's R.A. in 1 hour of Long.	Std. Time of Semid. pass ^d Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			$^{\circ}$ $'$ $''$ $'''$	$''$	$''$	$^{\circ}$ $'$ $''$	$^{\circ}$ $'$ $''$	$''$	$''$	$''$
Nov. 27	Moon I. v.	4.6	20 48 9.16		157.09	72.82	8.20 58 6.3	+ 440.1	16 17.3	59 40.7
	Moon I. L.	-	21 19 2.72		151.80	71.55	19 20 23.4	+ 534.4	16 11.7	59 20.1
	♄ Capricorni	4½	21 30 53.23	- .01			19 58			
	♄ Capricorni	5	21 36 28.95	- .01			19 22			
	28 Moon I. v.	5.7	21 48 51.77		146.39	70.23	8.17 25 20.7	+ 613.4	16 5.9	58 58.8
	Moon I. L.	-	22 17 36.86		141.18	68.94	15 16 1.9	+ 677.2	15 59.9	58 36.8
	50 Aquarii -	6	22 18 31.96	- .01			14 6			
	56 Aquarii -	6	22 24 22.17	- .01			15 9			
	29 Moon I. v.	6.7	22 45 21.68		136.38	67.71	8.12 55 23.4	+ 726.9	15 53.9	58 14.7
	Moon I. L.	-	23 12 12.13		132.13	66.61	10 26 8.4	+ 763.5	15 47.9	57 52.7
Dec. 1	♄ Aquarii	4½	23 12 10.00	- .01			9 47			
	B.A.C. 8214	6½	23 29 49.97	- .01			8 5			
	30 Moon I. v.	7.7	23 38 15.46		128.54	65.65	8. 7 50 45.9	+ 788.4	15 42.0	57 31.3
	Moon I. L.	-	0 3 39.73		125.63	64.87	5 11 30.7	+ 802.5	15 36.4	57 10.7
	33 Piscium -	5	23 59 41.37	- .01			6 20			
	B.A.C. 17 -	6	0 4 40.32	- .01			5 52			
	1 Moon I. v.	8.8	0 28 33.22		123.41	64.25	8. 2 30 24.6	+ 807.0	15 31.0	56 51.0
	Moon I. L.	-	0 53 4.22		121.87	63.81	N. 0 10 41.5	+ 802.6	15 25.9	56 32.2
	26 Ceti - -	6½	0 58 8.58	- .01			0 46			
	33 Ceti - -	6	1 4 53.23	- .01			1 51			
2	2 Moon I. v.	9.8	1 17 20.59		120.97	63.55	N. 2 50 4.3	+ 789.9	15 21.1	56 14.6
	Moon I. L.	-	1 41 29.89		120.68	63.44	5 26 6.9	+ 769.3	15 16.6	55 58.0
	96 Piscium -	6½	1 23 18.23	- .01			6 43			
	♄ Piscium -	4½	1 35 41.87	- .01			4 56			
	3 Moon I. v.	10.8	2 5 38.99		120.93	63.48	N. 7 57 16.8	+ 741.1	15 12.3	55 42.5
	Moon I. L.	-	2 29 54.12		121.67	63.64	10 22 4.4	+ 705.6	15 8.4	55 28.1
	♄ Ceti - -	4	2 22 18.28	.00			7 58			
	B.A.C. 830 -	6	2 36 33.41	.00			10 16			
	4 Moon I. v.	11.9	2 54 20.62		122.81	63.92	N. 12 39 1.5	+ 662.8	15 4.7	55 14.6
	Moon I. L.	-	3 19 2.77		124.27	64.29	14 46 41.9	+ 612.8	15 1.3	55 2.2
5	♄ Tauri - -	4	3 24 47.90	.00			12 33			
	B.A.C. 1119	6	3 33 12.61	.00			16 10			
	5 Moon I. v.	12.9	3 44 3.84		125.94	64.71	N. 16 43 41.0	+ 555.9	14 58.2	54 50.8
	Moon I. L.	-	4 9 25.72		127.72	65.17	18 28 37.8	+ 492.5	14 55.4	54 40.4
	♄ Tauri - -	6	4 2 45.35	+ .01			19 19			
	81 Tauri - -	4	4 16 35.30	+ .01			17 17			
	6 Moon I. v.	13.9	4 35 8.93		129.47	65.62	N. 20 0 15.4	+ 422.8	14 52.8	54 31.0
	Moon I. L.	-	5 3 24.53		131.15	66.04	21 17 24.2	+ 347.8	14 50.6	54 22.7
	105 Tauri - -	6	5 1 20.79	+ .01			21 33			
	♄ Tauri - -	6	5 12 40.03	+ .01			21 59			
7	7 Moon I. v.	14.9	5 29 46.59		132.48	66.39	N. 22 19 3.5	+ 268.1	14 48.6	54 15.5
	♄ Geminor. -	3½	6 8 14.12	+ .02			22 32			
	♄ Geminor. -	3	6 16 18.25	+ .02			N. 22 34			

MOON-CULMINATING STARS, 1889. 393

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension..	Corr. of R.A. for Tell. Day.	Var. of R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
			<i>h m s</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>	<i>" "</i>	<i>" "</i>
Dec. 8	Moon II.L.	-	5 56 22.46		133.43	66.65	N. 23 4 24.5	+ 184.9	14 47.0	54 9.6
	Moon II.U.	16.0	6 23 7.14		133.93	66.81	23 32 51.8	+ 99.4	14 45.7	54 4.9
	B.A.C. 2238.	6	6 45 19.88	+ .02			23 44			
	α Geminor.	6	6 55 42.46	+ .03			24 22			
9	Moon II.L.	-	6 49 54.89		133.94	66.83	N. 23 44 6.3	+ 13.0	14 44.8	54 1.7
	Moon II.U.	17.0	7 16 39.71		133.45	66.74	23 38 4.6	- 73.1	14 44.4	54 0.1
	κ Geminor.	3½	7 37 48.06	+ .03			24 40			
	84 Geminor.	6½	7 46 28.90	+ .03			22 37			
10	Moon II.L.	-	7 43 15.79		132.49	66.53	N. 23 14 58.8	- 157.4	14 44.4	54 0.1
	Moon II.U.	18.1	8 9 38.06		131.16	66.22	22 35 16.3	- 239.0	14 44.9	54 2.0
	η Cancri	6	8 26 20.39	+ .03			20 49			
	39 Cancri	6	8 33 46.30	+ .03			20 24			
11	Moon II.L.	-	8 35 42.52		129.55	65.84	N. 21 39 35.9	- 317.0	14 46.0	54 5.9
	Moon II.U.	19.1	9 12 6.49		127.77	65.41	20 28 46.8	- 390.4	14 47.6	54 11.9
	83 Cancri	6	9 12 49.84	+ .03			18 10			
	8 Leonis	6	9 30 57.73	+ .03			16 56			
12	Moon II.L.	-	9 26 48.76		125.95	64.96	N. 19 3 44.8	- 459.0	14 49.8	54 20.1
	Moon II.U.	20.1	9 51 49.70		124.23	64.53	17 25 30.5	- 522.5	14 52.8	54 30.8
	42 Leonis	6	10 15 54.54	+ .03			15 32			
	B.A.C. 3579	6	10 22 55.04	+ .03			14 55			
13	Moon II.L.	-	10 16 31.08		122.71	64.15	N. 15 35 7.0	- 580.6	14 56.3	54 43.8
	Moon II.U.	21.1	10 40 55.99		121.50	63.84	13 33 38.9	- 633.2	15 0.5	54 59.3
	B.A.C. 3845	6	11 10 12.06	+ .03			13 27			
	ι Leonis	4	11 18 10.13	+ .03			11 8			
14	Moon II.L.	-	11 5 8.75		120.70	63.64	N. 11 22 11.7	- 680.4	15 5.5	55 17.3
	Moon II.U.	22.2	11 29 14.64		120.37	63.56	9 15 2.2	- 721.9	15 11.0	55 37.8
	B.A.C. 3996	6	11 43 27.56	+ .03			5 49			
	π Virginis	4½	11 55 12.85	+ .03			7 14			
15	Moon II.L.	-	11 53 19.93		120.61	63.62	N. 6 33 49.6	- 757.5	15 17.3	56 0.6
	Moon II.U.	23.2	12 17 31.64		121.45	63.84	3 59 16.7	- 786.9	15 24.1	56 25.6
	B.A.C. 4254	6	12 32 44.48	+ .03			2 28			
	37 Virginis	6	12 45 59.32	+ .03			3 40			
16	Moon II.L.	-	12 41 57.50		122.97	64.23	N. 1 19 33.3	- 809.2	15 31.4	56 52.5
	Moon II.U.	24.2	13 6 45.81		125.20	64.81	8. 1 23 51.5	- 823.6	15 39.2	57 21.0
	80 Virginis	6	13 29 46.10	+ .03			4 50			
	B.A.C. 4572	6	13 38 8.54	+ .03			4 56			
17	Moon II.L.	-	13 32 5.32		128.18	65.57	8. 4 9 16.2	- 828.9	15 47.3	57 50.6
	Moon II.U.	25.3	13 58 5.02		131.90	66.52	6 54 42.1	- 823.6	15 55.5	58 20.8
	κ Virginis	4½	14 6 59.69	+ .03			9 45			
	106 Virginis	6	14 22 51.65	+ .03			6 24			
18	Moon II.L.	-	14 24 53.85		136.36	67.64	8. 9 37 52.0	- 805.9	16 3.8	58 51.2
	Moon II.U.	26.3	14 52 40.26		141.48	68.91	12 16 5.4	- 773.8	16 11.9	59 20.8
	♄ Libræ	4	15 22 0.83	+ .03			16 20			
	γ Libræ	4½	15 29 19.98	+ .02			8. 14 25			

AT TRANSIT AT GREENWICH.

Month and Day.	Name.	Magnitude.	Apparent Right Ascension.	Corr. of α 's R.A. for foll. Day.	Var. of α 's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of δ 's Dec. in 1 hour of Long.	Semidiameter.	Hor. Par.
Dec. 19	Moon II.L.	-	^{h m s} 15 21 31.54	"	"	"	^{° ' "} 8. 14 46 19.2	["] - 725.5	["] 16 19.6	["] 59 48.8
	Moon II.U.	27.3	15 51 38.80		147.14	70.29	17 5 7.2	- 659.3	16 26.6	60 14.5
20	Moon II.L.	-	16 22 46.10		159.08	73.15	8. 19 8 48.2	- 574.2	16 32.7	60 37.0
	Moon II.U.	28.4	16 55 9.00		164.63	74.45	20 53 34.2	- 470.3	16 37.8	60 55.7
21	Moon II.L.	-	17 28 33.77		169.30	75.54	8. 22 15 46.8	- 349.1	16 41.6	61 9.6
	Moon II.U.	29.4	18 2 46.92		172.62	76.31	23 12 18.8	- 214.2	16 44.0	61 18.3
22	Moon I.L.	-	18 34 56.35		174.17	76.69	8. 23 40 52.8	- 70.5	16 44.9	61 21.5
	Moon I.U.	1.0	19 9 46.75		173.89	76.63	8. 23 40 20.6	+ 75.7	16 44.2	61 19.3
23	Moon I.L.	-	19 44 22.30		171.72	76.14	23 10 51.9	+ 217.8	16 42.1	61 11.5
	Moon I.U.	2.1	20 18 21.71		167.93	75.27	8. 22 13 51.7	+ 350.0	16 38.7	60 58.8
24	Moon I.L.	-	20 51 27.76		162.92	74.12	20 51 48.6	+ 467.7	16 34.0	60 41.7
	Moon I.U.	3.1	21 23 28.81		157.18	72.78	8. 19 7 53.9	+ 568.3	16 28.3	60 20.8
25	Moon I.L.	-	21 54 18.92		151.17	71.35	17 5 41.7	+ 650.6	16 21.8	59 57.0
	7 Capricorni	3½	21 33 57.63	0.00			17 10			
26	8 Capricorni	3	21 40 55.93	- 0.01			16 38			
	Moon I.U.	4.1	22 23 57.32		145.28	69.92	8. 14 48 50.3	+ 715.0	16 14.7	59 30.9
70	Aquarii	-	22 52 27.21		139.79	68.57	12 20 48.7	+ 762.6	16 7.2	59 3.6
	74 Aquarii	6	22 42 41.22	- 0.01			11 8			
27	Moon I.U.	5.2	23 19 54.65		134.90	67.34	8. 9 44 48.0	+ 795.1	15 59.6	58 33.6
	Moon I.L.	-	23 46 27.49		130.70	66.27	7 3 39.2	+ 814.3	15 51.9	58 7.6
30	B.A.C. 8274	6	23 42 51.17	- 0.01			7 0			
	30 Piscium	5	23 56 17.85	- 0.01			6 38			
28	Moon I.U.	6.2	0 12 14.53		127.27	65.38	8. 4 19 51.9	+ 821.8	15 44.5	57 40.2
	Moon I.L.	-	0 37 24.89		124.59	64.67	1 35 36.0	+ 819.2	15 37.2	57 13.7
14	B.A.C. 81	6½	0 18 50.79	- 0.01			2 50			
	14 Ceti	6½	0 29 52.83	- 0.01			8. 1 7			
29	Moon I.U.	7.2	1 2 7.62		122.66	64.15	N. 1 7 14.2	+ 807.8	15 30.3	56 48.5
	Moon I.L.	-	1 26 31.47		121.43	63.81	3 46 58.5	+ 788.3	15 23.9	56 24.8
B.A.C. 408	Piscium	6½	1 17 0.61	- 0.01			4 9			
	7 Piscium	4½	1 35 41.65	- 0.01			4 56			
30	Moon I.U.	8.3	1 50 44.64		120.87	63.64	N. 6 22 5.3	+ 761.7	15 17.9	56 2.9
	Moon I.L.	-	2 14 54.70		120.90	63.63	8 51 10.9	+ 728.2	15 12.4	55 42.8
1	1 Ceti	4½	2 7 9.54	- 0.01			8 20			
	B.A.C. 741	6½	2 18 37.24	- 0.01			9 13			
31	Moon I.U.	9.3	2 39 8.42		121.47	63.76	N. 11 12 55.3	+ 688.2	15 7.4	55 24.6
	Moon I.L.	-	3 3 31.76		122.49	64.00	13 26 1.5	+ 641.8	15 3.0	55 8.3
6	Arietis	6	2 45 24.72	- 0.01			14 38			
	B.A.C. 987	6½	3 5 19.27	- 0.01			N. 12 38			

In the Year 1889 there will be three Eclipses of the Sun and two of the Moon.

I.—A Total Eclipse of the SUN, January 1, 1889, invisible at Greenwich.

ELEMENTS.			
Greenwich Mean Time of \odot in R.A.	Jan. 1,	^h 9 ^m 16 ^s 1.5	
\odot 's and ζ 's Right Ascension - - - -		18 51 1.26	
ζ 's Declination - - - - - - - -	S.	22 3 56.3	
\odot 's Declination - - - - - - - -	S.	22 56 3.4	
ζ 's Hourly Motion in R.A. - - - - -		40 22.8	
\odot 's Hourly Motion in R.A. - - - - -		2 45.5	
ζ 's Hourly Motion in Declination - - -	S.	6.8	
\odot 's Hourly Motion in Declination - - -	N.	13.5	
ζ 's Equatorial Horizontal Parallax - -		60 44.7	
\odot 's Equatorial Horizontal Parallax - -		9.0	
ζ 's True Semidiameter - - - - - -		16 34.8	
\odot 's True Semidiameter - - - - - -		16 18.2	

Begins on the Earth generally, Jan. 1, 7^h 3^m.6, Mean Time at Greenwich,
in Longitude 179° 52' W. of Greenwich, and Latitude 31° 35' N.

Central Eclipse begins generally, January 1, 8^h 24^m.0,
in Longitude 179° 5' E. of Greenwich, and Latitude 53° 7' N.

Central Eclipse at Noon, January 1, 9^h 16^m.0,
in Longitude 137° 58' W. of Greenwich, and Latitude 36° 44' N.

Central Eclipse ends generally, January 1, 10^h 9^m.8,
in Longitude 94° 18' W. of Greenwich, and Latitude 52° 16' N.

Ends on the Earth generally, January 1, 11^h 30^m.2,
in Longitude 95° 54' W. of Greenwich, and Latitude 30° 36' N.

The limiting lines of this Eclipse, in the accompanying diagram, have been laid down from the following calculated positions :—

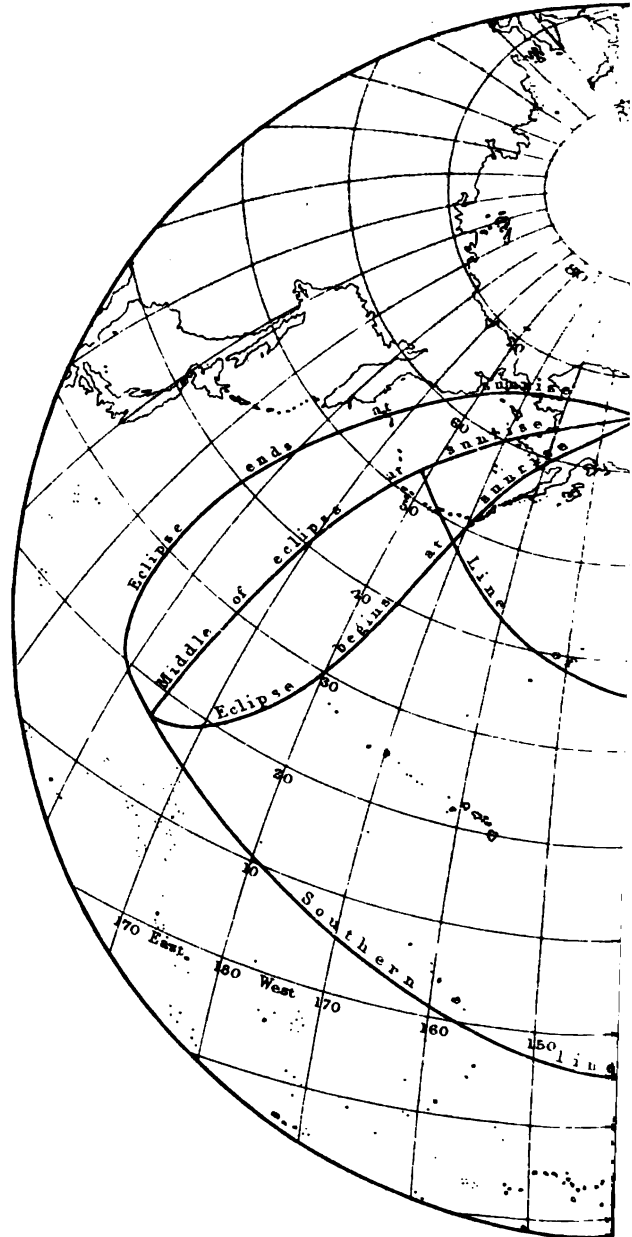
Line of Central Eclipse.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
179	5 E.	53	7 N.	135	25 W.	36	46 N.
174	30 W.	49	50	131	24	37	9
167	58	46	31	127	34	37	53
162	59	44	5	123	17	39	5
156	56	41	16	118	10	40	55
151	53	39	27	112	11	43	29
147	37	38	9	107	12	45	50
143	47	37	19	100	41	49	3
139	46 W.	36	49 N.	94	18 W.	52	16 N.

Southern line of simple contact.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
164	8 E.	17	32 N.	134	57 W.	3	55 S.
173	21 E.	13	33	129	21	3	16
178	33 W.	9	49	123	35	1	54 S.
171	10	6	20	117	45	0	1 N.
164	16	3	11	111	36	2	28
158	10	0	37 N.	104	42	5	30
152	22	1	28 S.	97	17	8	54
146	37	2	59	89	12	12	34
141	2 W.	3	49 S.	80	2 W.	16	32 N.

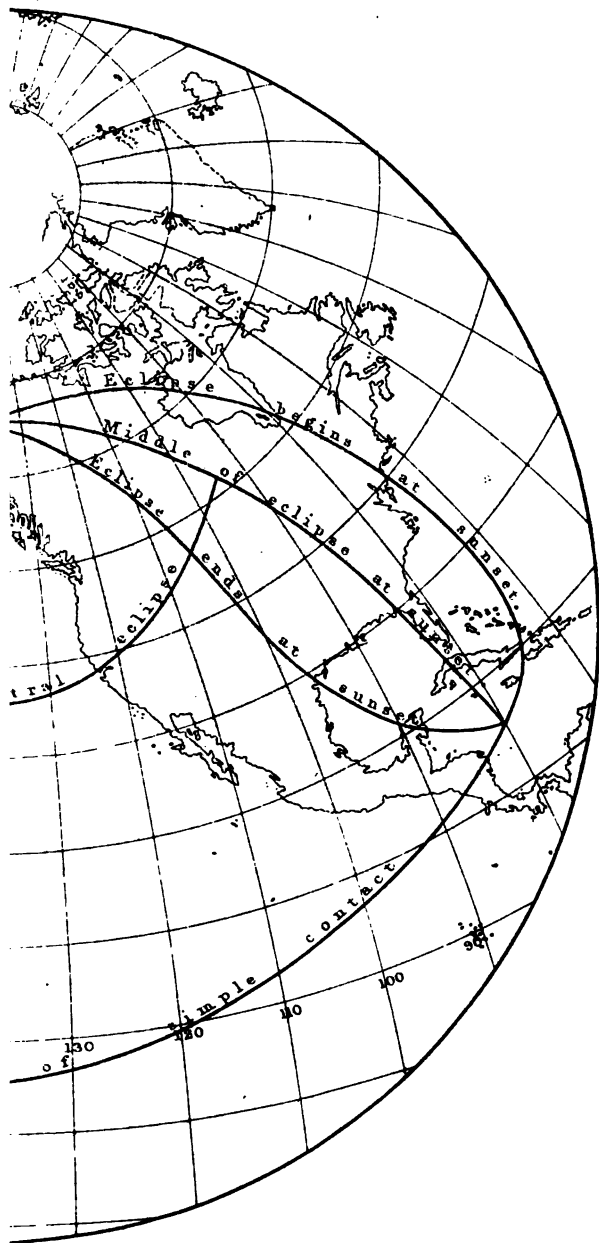
Eclipse begins at Sun-set.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
80	2 W.	16	32 N.	74	8 W.	41	3 N.
78	28	16	50	76	46	47	18
75	55	18	18	81	7	53	23
74	0	21	7	87	36	58	48
72	52	24	49	96	52	63	10
72	25	29	29	108	36	66	1
72	46 W.	34	59 N.	122	15 W.	67	11 N.

Eclipse ends at Sun-rise.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
151	17 W.	67	12 N.	157	4 E.	35	57 N.
165	10	66	19	156	38	30	28
177	30 W.	63	41	157	3	25	49
172	52 E.	59	30	158	9	22	7
165	59	54	12	160	2	19	19
161	22	48	12	162	36	17	51
158	33 E.	41	59 N.	164	8 E.	17	32 N.

PATH OF THE MOON'S
UPON THE SURFACE OF THE EARTH, I
JANU



SHADOW AND PENUMBRA
 OF THE TOTAL ECLIPSE OF THE SUN,
 APRIL 1, 1889.



II.—A Partial Eclipse of the MOON, January 16, 1889, partly visible at Greenwich.

ELEMENTS.			
Greenwich Mean Time of δ in R.A.	Jan. 16,	^h 17 ^m 22 ^s 49 [·] 1	
ζ 's Right Ascension - - - - -		7 57 42 [·] 50	
ζ 's Declination - - - - -	N.	21 15 48 [·] 0	
\odot 's Declination - - - - -	S.	20 41 58 [·] 1	
ζ 's Hourly Motion in R.A. - - - - -		33 1 [·] 1	
\odot 's Hourly Motion in R.A. - - - - -		2 40 [·] 1	
ζ 's Hourly Motion in Declination - - - - -	S.	3 14 [·] 5	
\odot 's Hourly Motion in Declination - - - - -	N.	29 [·] 9	
ζ 's Equatorial Horizontal Parallax - - - - -		55 9 [·] 3	
\odot 's Equatorial Horizontal Parallax - - - - -		9 [·] 0	
ζ 's True Semidiameter - - - - -		15 3 [·] 3	
\odot 's True Semidiameter - - - - -		16 17 [·] 6	

First contact with the Penumbra, Jan. 16,	^h 14 ^m 39 [·] 8	}	Mean Time at Greenwich.
First contact with the Shadow - —	16, 15 58 [·] 9		
Middle of the Eclipse - - - —	16, 17 29 [·] 7		
Last contact with the Shadow - —	16, 19 0 [·] 5		
Last contact with the Penumbra —	16, 20 19 [·] 6		

At these times respectively, the Moon will be in the Zenith at the places whose positions are,

Longitude	[°] 38 ['] 44 W.	}	of Greenwich.	Latitude	[°] 21 ['] 32 N.
	57 50				21 28
	79 46				21 23
	101 42				21 18
	120 48 W.				21 13 N.

Magnitude of the Eclipse (Moon's diameter = 1) 0[·]696.

The first contact with the Shadow occurs at 134° from the Northernmost point of the Moon's limb towards the East.

The last contact at 123° towards the West; in each case, for *direct* image.

At Greenwich the Moon will set at 20^h 10^m.

III.—An Annular Eclipse of the SUN, June 27, 1889, invisible at Greenwich,

ELEMENTS.	
Greenwich Mean Time of \odot in R.A.	June 27, 20 ^h 56 ^m 54 ^s ·9
\odot 's and ζ 's Right Ascension - - - -	6 29 34·17
ζ 's Declination - - - - -	N. 22 47 25·7
\odot 's Declination - - - - -	N. 23 16 43·5
ζ 's Hourly Motion in R. A. - - - - -	32 6·8
\odot 's Hourly Motion in R. A. - - - - -	2 35·6
ζ 's Hourly Motion in Declination - - -	N. 1 12·4
\odot 's Hourly Motion in Declination - - -	S. 7·3
ζ 's Equatorial Horizontal Parallax - -	53 59·5
\odot 's Equatorial Horizontal Parallax - -	8·7
ζ 's True Semidiameter - - - - -	14 44·2
\odot 's True Semidiameter - - - - -	15 46·0

Begins on the Earth generally, June 27, 18^h 6^m·1, Mean Time at Greenwich,
in Longitude 8° 48' E. of Greenwich, and Latitude 21° 16' S.

Central Eclipse begins generally, June 27, 19^h 20^m·8,
in Longitude 3° 33' W. of Greenwich, and Latitude 32° 39' S.

Central Eclipse at Noon, June 27, 20^h 56^m·9,
in Longitude 46° 31' E. of Greenwich, and Latitude 9° 48' S.

Central Eclipse ends generally, June 27, 22^h 39^m·4,
in Longitude 97° 57' E. of Greenwich, and Latitude 27° 39' S.

Ends on the Earth generally, June 27, 23^h 54^m·1,
in Longitude 85° 7' E. of Greenwich, and Latitude 16° 9' S.

At the CAPE OF GOOD HOPE, a Partial Eclipse is visible.

Begins - - - -	June 27, 19 ^h 32 ^m ·5	} Mean Time at the Capo.
Greatest Phase	20 53·9	
Ends - - - - -	22 30·6	

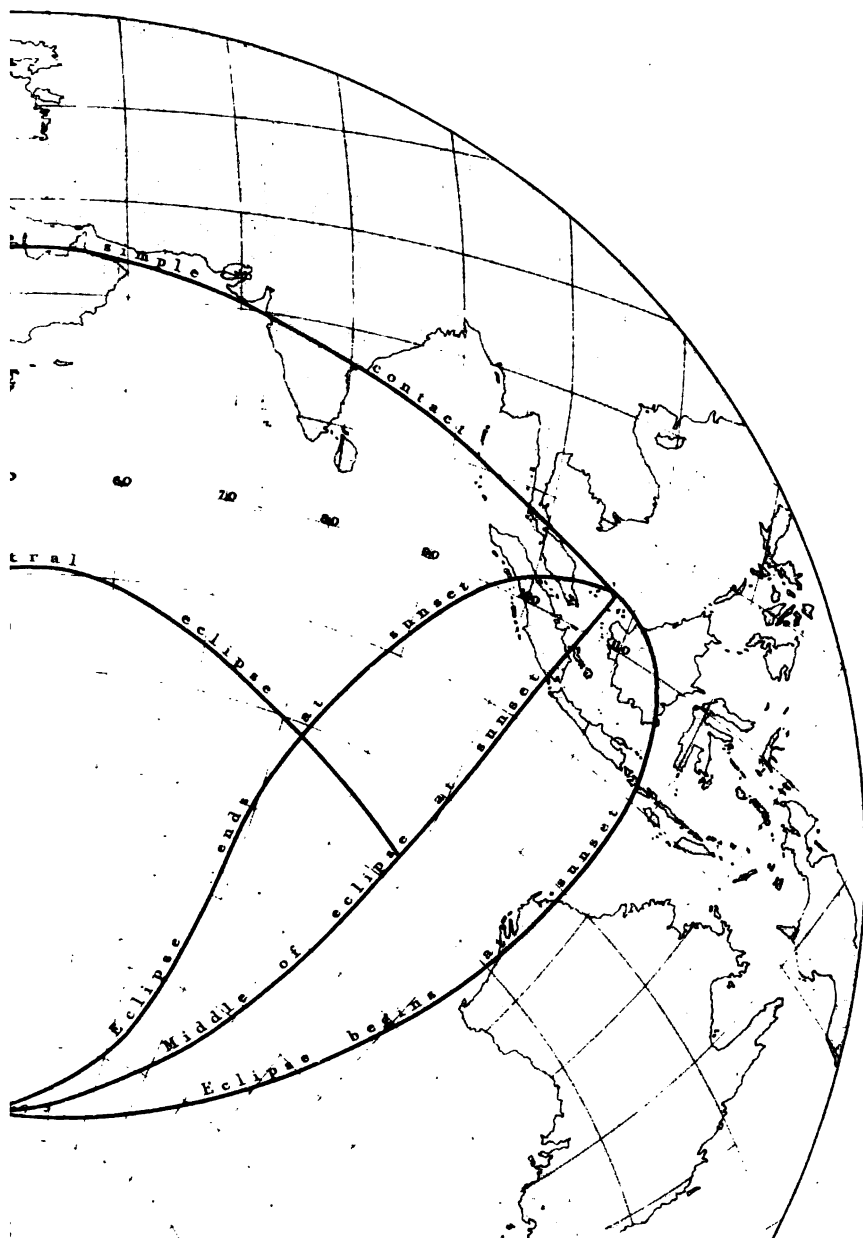
Magnitude of the Eclipse (Sun's diameter = 1) 0·693.

Angle, from North Pole, of	{ first contact, 88° towards the West last contact, 61° towards the East	} for direct image.
Angle, from Vertex, of	{ first contact, 42° towards the East last contact, 142° towards the West	

The limiting lines of this Eclipse, in the accompanying diagram, have been laid down from the following calculated positions :—



PATH OF THE MOON
THE SURFACE OF THE EARTH, DURING
JUNE



THE SUN'S PENUMBRA UPON
 THE ANNULAR ECLIPSE OF THE SUN.
 7. 1889.

Line of Central Eclipse.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' W.	° ' S.	° ' E.	° ' S.
3 33 W.	32 39 S.	49 41 E.	9 36 S.
5 19 E.	28 12	54 44	9 58
11 13	25 30	59 49	11 5
17 48	22 0	65 15	12 54
23 52	18 44	70 58	15 13
29 21	16 38	77 2	17 58
34 52	13 14	83 34	21 2
39 53	11 18	90 29	24 16
44 52 E.	10 3 S.	97 57 E.	27 39 S.

Northern line of simple contact.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' W.	° ' S.	° ' E.	° ' N.
14 9 W.	1 17 S.	48 48 E.	24 49 N.
4 5 W.	3 14 N.	55 11	24 9
3 47 E.	7 9	61 48	22 57
10 43	10 48	68 38	20 56
17 9	14 13	75 36	18 16
23 42	17 32	82 24	15 21
30 7	20 24	89 37	12 3
36 24	22 35	97 40	8 21
42 37 E.	23 58 N.	107 49 E.	3 54 N.

Eclipse begins at Sun-set.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' E.	° ' S.	° ' E.	° ' S.
58 6 E.	66 51 S.	114 31 E.	28 35 S.
71 37	65 47	116 26	18 8
84 51	62 33	116 42	9 20
95 51	57 4	115 34	2 43 S.
104 37	49 9	113 20	1 25 N.
110 39 E.	39 26 S.	107 49 E.	3 54 N.

Eclipse ends at Sun-rise.			
Longitude.	Latitude.	Longitude.	Latitude.
° ' W.	° ' S.	° ' W.	° ' S.
14 9 W.	1 17 S.	20 3 W.	33 34 S.
16 33	1 44	15 14	44 11
19 40	3 47	7 31 W.	53 30
21 53	7 53	3 52 E.	60 43
22 57	14 29	17 55	65 3
22 27 W.	23 14 S.	33 29 E.	66 47 S.

IV.—A Partial Eclipse of the MOON, July 12, 1889, partly visible at Greenwich.

ELEMENTS.		
Greenwich Mean Time of \mathcal{J} in R.A. July 12,	^h 8	^m 49 ^s 40.5
(\mathcal{C} 's Right Ascension - - - - -	19	29 9.12
(\mathcal{C} 's Declination - - - - -	S. 22	39 9.7
(\odot 's Declination - - - - -	N. 21	52 18.0
(\mathcal{C} 's Hourly Motion in R.A. - - - - -	40	55.5
(\odot 's Hourly Motion in R.A. - - - - -	2	32.4
(\mathcal{C} 's Hourly Motion in Declination - - - N.	2	16.6
(\odot 's Hourly Motion in Declination - - - S.	21	6
(\mathcal{C} 's Equatorial Horizontal Parallax - -	61	6.1
(\odot 's Equatorial Horizontal Parallax - -	8	7
(\mathcal{C} 's True Semidiameter - - - - -	16	40.6
(\odot 's True Semidiameter - - - - -	15	46.2

First contact with the Penumbra, July 12,	^h 6 ^m 35.4	} Mean Time at Greenwich.
First contact with the Shadow - — 12,	7 43.1	
Middle of the Eclipse - - - - - 12,	8 54.0	
Last contact with the Shadow - — 12,	10 4.9	
Last contact with the Penumbra — 12,	11 12.6	

At these times respectively, the Moon will be in the Zenith at the places whose positions are,

Longitude	[°] 81 ['] 4 E.	} of Greenwich.	Latitude	[°] 22 ['] 52 S.
	64 52			22 50
	47 54			22 47
	30 56			22 44
	14 44 E.			22 41 S.

Magnitude of the Eclipse (Moon's diameter = 1) 0.480.

The first contact with the Shadow occurs at 39° from the Northernmost point of the Moon's limb towards the East.

The last contact at 45° towards the West; in each case, for *direct* image.

At Greenwich, the Moon will rise at 8^h 14^m.

V.—A Total Eclipse of the SUN, December 21–22, 1889, invisible at Greenwich.

ELEMENTS.		
Greenwich Mean Time of \odot in R.A. Dec. 22,	^h 0	^m 52 ^s 31.2
\odot 's and ζ 's Right Ascension - - - -	18	4 4.60
ζ 's Declination - - - - - S.	[°] 23	['] 15 ["] 25.2
\odot 's Declination - - - - - S.	23	26 59.7
ζ 's Hourly Motion in R.A. - - - - -	41	19.4
\odot 's Hourly Motion in R.A. - - - - -	2	46.7
ζ 's Hourly Motion in Declination - - - S.	3	14.9
\odot 's Hourly Motion in Declination - - - N.		1.1
ζ 's Equatorial Horizontal Parallax - -	61	18.7
\odot 's Equatorial Horizontal Parallax - -		9.0
ζ 's True Semidiameter - - - - -	16	44.1
\odot 's True Semidiameter - - - - -	16	17.9

Begins on the Earth generally, December 21, 22^h 16^m 8, Mean Time at Green^h,
in Longitude 59° 29' W. of Greenwich, and Latitude 11° 20' N.

Central Eclipse begins generally, December 21, 23^h 13^m 2,
in Longitude 71° 59' W. of Greenwich, and Latitude 14° 53' N.

Central Eclipse at Noon, December 22, 0^h 52^m 5,
in Longitude 13° 23' W. of Greenwich, and Latitude 12° 36' S.

Central Eclipse ends generally, December 22, 2^h 35^m 5,
in Longitude 48° 39' E. of Greenwich, and Latitude 5° 11' N.

Ends on the Earth generally, December 22, 3^h 31^m 9,
in Longitude 36° 6' E. of Greenwich, and Latitude 1° 38' N.

At the CAPE OF GOOD HOPE, a Partial Eclipse is visible, and

Begins - - - -	Dec. 22,	^h 2 ^m 21.7	} Mean Time at the Cape.
Greatest Phase		3 8.8	
Ends - - - -		3 52.9	

Magnitude of the Eclipse (Sun's diameter = 1) 0.222.

Angle, from North Pole, of	{ first contact, 39° towards the West	} for direct image.
	{ last contact, 37° towards the East	
Angle, from Vertex, of	{ first contact, 77° towards the East	
	{ last contact, 79° towards the West	

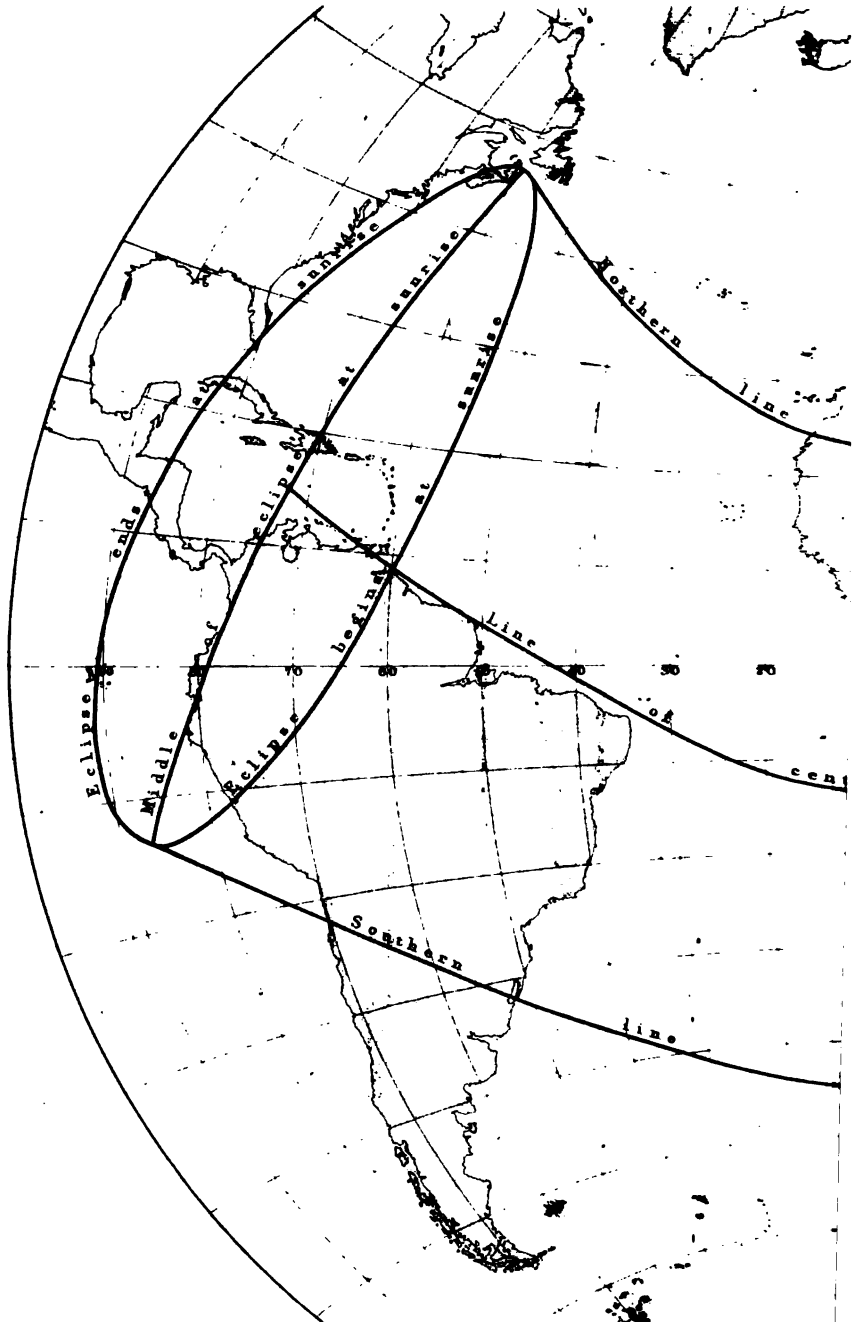
The limiting lines of this Eclipse, in the accompanying diagram, have been laid down from the following calculated positions:—

Line of Central Eclipse.							
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
71	59 W.	14	53 N.	9	37 W.	13	4 S.
64	14	11	18	2	57 W.	13	6
57	57	8	8	4	27 E.	12	6
50	57	4	24	11	54	10	9
43	33	0	8 N.	19	43	7	24
36	15	3	47 S.	27	29	4	11
29	21	7	19	34	40	1	2 S.
22	25	10	13	41	1	1	50 N.
17	2 W.	12	32 S.	48	39 E.	5	11 N.

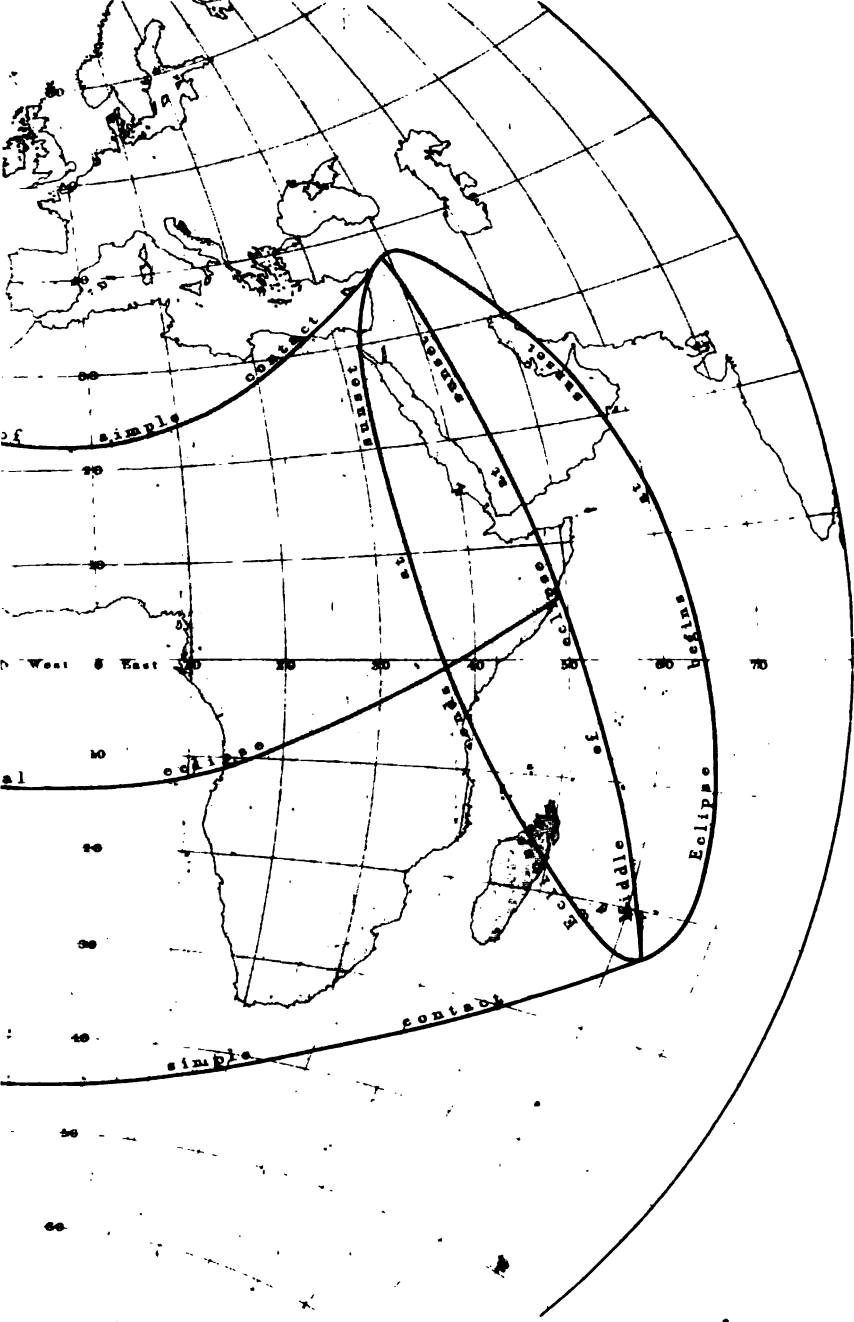
Northern line of simple contact.				Southern line of simple contact.			
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
59	2 W.	46	43 N.	86	2 W.	14	14 S.
54	47	45	1	77	40	17	59
47	58	40	50	71	24	21	5
42	55	38	1	64	14	24	52
37	32	34	56	56	49	28	52
31	34	31	35	49	14	32	51
25	35	28	26	41	11	36	39
19	33	25	42	32	14	40	6
12	14	23	39	21	54	42	48
6	41 W.	22	38	10	38 W.	44	13
0	13 E.	22	56	0	50 E.	44	9
6	21	24	9	11	29	42	46
12	24	26	2	21	18	40	28
18	22	28	21	30	29	37	32
23	41	30	40	39	12	34	11
28	35	32	54	47	20	30	44
35	3	35	58	54	12	27	44
39	4 E.	37	50 N.	63	4 E.	23	50 S.

Eclipse begins at sunset.				Eclipse ends at sunrise.			
Longitude.		Latitude.		Longitude.		Latitude.	
°	'	°	'	°	'	°	'
63	4 E.	23	50 S.	86	2 W.	14	14 S.
64	30	23	32	87	29	13	56
66	20	22	15	89	23	12	38
67	25	19	24	90	36	9	45
67	22	14	1	90	43	4	20 S.
65	18	3	43 S.	88	45	6	0 N.
60	46	10	8 N.	83	55	19	49
54	7	24	1	76	19	33	26
47	33	32	48	68	35	41	57
42	22	36	50	62	33	45	45
39	13	37	41	59	15	46	35
39	4 E.	37	50 N.	59	2 W.	46	43 N.

PATH OF THE MOON'S SH
THE SURFACE OF THE EARTH, DURI
DECEMBE



DOW AND PENUMBRA UPON
 G THE TOTAL ECLIPSE OF THE SUN,
 21-22, 1889.



ELEMENTS OF OCCULTATIONS, 1889. 40

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and *.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and *.	Apparent Declination of *.	Diff. of Apparent Dec. of (and *.	
			h m s	h m s	° ' "	° ' "	° ' "
Jan. 3	7 Capricor.	5½	10 02 1	20 58 2 78	S. 20 17 43 4	N. 71 18	70 N. 41 N.
3	30 Capricor.	6	15 33 21	21 11 41 59	18 27 1 2	N. 1 5	28 N. 37 S.
3	31 Capricor.	6½	15 41 17	21 12 0 94	17 55 40 6	S. 29 15	0 71 S.
3	Capricor.	4½	17 20 11	21 16 1 66	17 18 31 5	S. 53 43	24 S. 90 S.
4	7 Capricor.	3½	0 46 31	21 33 54 29	17 9 56 3	S. 1 34	27 N. 39 S.
4	8 Capricor.	3	3 43 13	21 40 52 60	S. 16 37 58 0	S. 8 3	22 N. 46 S.
4	Aquarii -	4	12 6 24	22 0 24 41	14 24 37 3	S. 64 43	35 S. 90 S.
4	45 Aquarii -	6	17 38 11	22 13 1 36	13 51 46 0	S. 44 3	10 S. 90 S.
4	50 Aquarii -	6	20 3 11	22 18 28 41	14 5 39 9	S. 6 6	26 N. 44 S.
4	B.A.C. 7835	6½	22 32 46	22 24 3 29	13 29 7 6	S. 17 26	17 N. 56 S.
5	70 Aquarii -	6	6 58 27	22 42 38 01	S. 11 8 38 4	S. 70 2	42 S. 90 S.
5	74 Aquarii -	6	9 15 50	22 47 36 30	12 12 35 3	N. 18 26	52 N. 21 S.
5	ψ Aquarii -	4½	19 46 53	23 10 2 88	9 41 43 0	S. 16 57	19 N. 55 S.
5	ψ Aquarii -	4½	20 45 43	23 12 6 51	9 47 30 3	S. 0 11	36 N. 38 S.
5	ψ Aquarii -	5	21 15 43	23 13 9 47	10 13 12 5	N. 31 8	70 N. 9 S.
6	B.A.C. 8214	6½	5 15 59	23 29 46 49	S. 8 4 55 0	S. 6 22	30 N. 44 S.
6	B.A.C. 8274	6	11 38 53	23 42 48 01	7 0 0 4	N. 2 13	39 N. 36 S.
6	30 Piscium -	5	18 19 43	23 56 14 70	6 38 1 4	N. 57 53	83 N. 21 N.
6	33 Piscium -	5	20 1 33	23 59 37 93	6 19 54 7	N. 59 35	84 N. 23 N.
6	B.A.C. 17 -	6	22 31 59	0 4 36 89	5 52 5 6	N. 61 5	84 N. 25 N.
7	B.A.C. 81 -	6½	5 43 47	0 18 47 66	S. 2 50 9 7	S. 36 30	2 N. 83 S.
7	14 Ceti - -	6½	11 23 22	0 29 49 70	1 7 7 0	S. 73 10	49 S. 90 S.
7	15 Ceti - -	6½	12 42 21	0 32 22 91	1 6 59 6	S. 57 52	22 S. 90 S.
7	20 Ceti - -	5½	20 27 8	0 47 18 96	S. 1 44 59 8	N. 70 42	88 N. 43 N.
8	26 Ceti - -	6½	2 4 57	0 58 5 18	N. 0 46 7 6	S. 14 57	23 N. 54 S.
8	29 Ceti - -	6½	4 16 9	1 2 15 21	N. 1 24 33 8	S. 28 5	11 N. 70 S.
8	33 Ceti - -	6	5 37 26	1 4 49 84	1 51 8 3	S. 39 1	0 89 S.
8	35 Ceti - -	6½	6 39 48	1 6 48 36	1 52 55 9	S. 28 49	10 N. 71 S.
8	f Piscium -	5½	9 25 51	1 12 3 50	3 1 38 7	S. 65 43	34 S. 87 S.
8	γ Piscium -	4½	21 54 52	1 35 38 50	4 55 24 1	S. 37 55	1 N. 86 S.
9	64 Ceti - -	6	13 46 8	2 5 28 68	N. 8 2 50 2	S. 51 36	15 S. 82 S.
9	ξ Ceti - -	4½	14 38 2	2 7 6 35	8 19 25 2	S. 58 56	25 S. 82 S.
9	B.A.C. 741 -	6½	20 43 1	2 18 34 03	9 12 32 2	N. 47 48	11 S. 81 S.
9	ξ Ceti - -	4	22 40 6	2 22 14 93	7 57 36 7	N. 47 26	90 N. 13 N.
10	B.A.C. 830 -	6	6 12 19	2 36 30 05	10 15 56 7	S. 13 57	24 N. 50 S.
10	μ Ceti - -	4	7 29 20	2 38 56 03	N. 9 38 34 6	N. 36 17	86 N. 1 N.
10	B.A.C. 987 -	6½	21 18 2	3 5 15 99	12 37 32 3	S. 9 14	28 N. 43 S.
12	B.A.C. 1272	6	2 12 50	4 1 38 18	17 2 30 0	S. 29 22	8 N. 63 S.
12	δ Tauri - -	4	9 40 43	4 16 31 98	17 16 49 5	N. 10 36	50 N. 17 S.
12	63 Tauri - -	6	9 56 11	4 17 3 04	16 31 0 3	N. 58 13	90 N. 35 N.
12	B.A.C. 1351	6½	9 57 50	4 17 6 33	N. 16 22 9 5	N. 67 16	90 N. 53 N.
12	δ Tauri - -	6	10 15 31	4 17 41 85	17 11 7 1	N. 20 21	61 N. 8 S.
12	β Tauri - -	5	10 56 30	4 19 4 16	17 40 22 0	S. 4 10	34 N. 32 S.
12	ε Tauri - -	3½	12 27 55	4 22 8 11	18 55 56 5	S. 69 18	54 S. 71 S.
12	B.A.C. 1468	6	21 10 49	4 39 47 91	N. 18 31 53 8	N. 10 58	50 N. 15 S.

404 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (ϵ and \ast).	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (ϵ and \ast).	Apparent Declination of \ast .	Diff. of Apparent Dec. of (ϵ and \ast).	
			h m s	h m s	$^{\circ}$ ' "	$^{\circ}$ ' "	$^{\circ}$ ' "
Jan. 12	ϵ Tauri - -	5½	23 40 7	4 44 52.93	N.18 38 55.4	N.18 52	60 N. 7 S.
13	B.A.C. 1563	5½	6 31 54	4 58 59.85	19 39 4.2	S. 2 46	35 N. 27 S.
13	m Tauri - -	5½	7 26 57	5 053.75	18 29 39.2	N.71 30	90 N. 70 N.
13	l Tauri - -	5½	7 37 2	5 1 14.57	20 16 12.3	S. 34 11	2 N. 65 S.
13	B.A.C. 1651	6½	13 56 35	5 14 23.62	19 41 55.0	N.31 23	79 N. 8 N.
13	B.A.C. 1733	6½	19 58 45	5 27 2.88	N.20 23 31.2	N.16 13	56 N. 7 S.
13	ζ Tauri - -	3½	21 51 45	5 31 1.03	21 4 21.6	S. 17 4	20 N. 40 S.
14	B.A.C. 1835	6½	2 56 4	5 41 45.05	20 49 39.4	N.16 18	57 N. 5 S.
14	χ Orionis -	4½	5 47 8	5 47 48.83	20 15 11.9	N.60 9	90 N. 46 N.
14	141 Tauri - -	6	9 8 59	5 54 59.62	22 23 43.8	S. 58 20	30 S. 68 S.
14	B.A.C. 1970	6½	12 48 57	6 2 50.90	N.22 12 25.9	S. 37 24	2 S. 65 S.
14	η Geminor.	3½	15 17 52	6 8 10.99	22 32 13.5	S. 51 26	19 S. 67 S.
14	μ Geminor.	3	19 2 26	6 16 15.13	22 34 6.8	S. 45 51	12 S. 67 S.
14	15 Geminor.	6	21 18 46	6 21 9.91	20 51 22.1	N.60 44	90 N. 50 N.
15	δ Geminor.	6	8 14 7	6 44 54.48	21 53 23.9	N. 9 28	48 N. 6 S.
15	44 Geminor.	6½	14 30 47	6 58 38.01	N.22 48 6.1	S. 44 53	10 S. 67 S.
15	δ Geminor.	3½	21 17 29	7 13 30.12	22 11 4.9	S. 12 19	25 N. 29 S.
16	63 Geminor.	5½	0 46 31	7 21 9.51	21 40 12.8	N.14 17	54 N. 3 S.
16	84 Geminor.	6½	12 15 37	7 46 26.13	22 37 12.9	S. 66 15	45 S. 67 S.
16	7 Cancri -	6½	17 11 35	7 57 17.77	22 22 52.2	S. 66 28	45 S. 68 S.
16	μ Cancri -	5½	18 59 8	8 1 14.52	N.21 54 8.4	S. 43 41	8 S. 68 S.
17	B.A.C. 2788	6	0 44 16	8 13 53.62	21 5 50.8	S. 16 51	21 N. 40 S.
17	B.A.C. 2854	6	5 56 38	8 25 19.64	19 21 34.6	N.64 56	90 N. 50 N.
17	η Cancri -	6	6 23 8	8 26 17.81	20 48 58.7	S. 24 31	13 N. 50 S.
17	35 Cancri -	6½	7 35 47	8 28 57.15	19 58 7.3	N.20 38	62 N. 3 S.
17	39 Cancri -	6	9 46 33	8 33 43.76	N.20 23 51.4	S. 15 45	22 N. 40 S.
17	40 Cancri -	6	9 48 52	8 33 48.81	20 21 41.9	S. 13 47	24 N. 37 S.
17	ϵ Cancri -	6	9 56 25	8 34 5.36	19 56 6.5	N.11 11	50 N. 12 S.
17	42 Cancri -	6½	10 3 52	8 34 21.69	20 6 35.4	N. 0 5	38 N. 24 S.
17	B.A.C. 2925	6½	10 9 51	8 34 34.79	19 58 17.0	N. 7 53	46 N. 16 S.
18	80 Cancri -	6½	0 25 52	9 5 42.98	N.18 29 51.7	N.13 56	53 N. 13 S.
18	83 Cancri -	6	3 41 25	9 12 47.49	18 10 26.5	N.11 41	50 N. 15 S.
18	8 Leonis -	6	12 4 37	9 30 55.46	16 56 6.3	N.25 35	68 N. 4 S.
19	34 Leonis -	6	4 17 53	10 5 40.31	13 54 2.5	N.72 51	90 N. 58 N.
19	37 Leonis -	6	6 40 29	10 10 43.55	14 16 48.7	N.28 29	71 N. 4 S.
19	42 Leonis -	6	9 5 59	10 15 52.44	N.15 32 0.6	S. 69 13	41 S. 74 S.
19	B.A.C. 3579	6	12 24 32	10 22 52.97	14 54 32.2	S. 63 10	30 S. 75 S.
19	ϵ Leonis -	6	14 0 49	10 26 16.56	14 42 19.2	S. 66 29	35 S. 75 S.
19	l Leonis -	5	22 9 12	10 43 25.50	11 7 53.3	N.66 20	90 N. 38 N.
20	ϵ Virginis -	6	21 46 37	11 32 44.17	8 44 50.9	S. 50 52	12 S. 81 S.
21	ν Virginis -	4½	1 21 1	11 40 9.28	N. 7 9 1.8	N. 3 4	41 N. 34 S.
21	B.A.C. 3996	6	2 55 42	11 43 25.72	5 48 37.5	N.64 48	90 N. 31 N.
21	B.A.C. 4104	6½	13 48 28	12 5 59.21	4 40 15.9	N. 1 47	40 N. 36 S.
21	ϵ Virginis -	5	18 0 48	12 14 42.58	3 55 50.0	S. 5 58	33 N. 43 S.
22	B.A.C. 4254	6	2 40 46	12 32 42.69	N. 2 27 53.1	S. 25 59	14 N. 66 S.

ELEMENTS OF OCCULTATIONS, 1889. 405

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
			h m s	h m s	° ' "	° ' "	° ' "
Jan. 23	80 Virginis -	6	5 50 3	13 29 44.29	S. 4 49 46.1	N. 66 20	85 N. 29 N.
23	B.A.C. 4572	6	9 45 40	13 38 6.73	4 56 21.4	N. 23 4	61 N. 17 S.
24	ξ Libræ -	6	17 47 23	14 48 20.36	11 26 38.9	N. 21 39	55 N. 18 S.
24	ξ Libræ -	6	18 50 51	14 50 43.76	10 57 37.1	S. 19 35	17 N. 58 S.
24	18 Libræ -	6½	19 47 49	14 52 52.74	10 41 48.1	S. 46 19	9 S. 90 S.
25	γ Libræ -	4½	11 35 57	15 29 17.87	S. 14 25 2.3	N. 3 52	36 N. 34 S.
25	η Libræ -	6	15 12 59	15 37 48.67	15 19 1.1	N. 20 50	51 N. 19 S.
25	θ Libræ -	4½	19 17 33	15 47 29.16	16 24 4.7	N. 45 30	74 N. 5 N.
25	49 Libræ -	5½	22 2 49	15 54 4.38	16 12 14.9	N. 7 14	36 N. 31 S.
26	B.A.C. 5408	6½	3 54 44	16 8 13.93	18 14 41.3	N. 75 48	72 N. 50 N.
26	χ Ophiuchi	6	8 57 40	16 20 33.86	S. 18 12 7.9	N. 29 42	58 N. 10 S.
26	24 Scorpii -	5	14 51 20	16 35 7.56	17 31 30.2	S. 58 13	29 S. 90 S.
26	B.A.C. 5580	6	14 56 29	16 35 20.36	19 42 36.9	N. 72 14	70 N. 42 N.
26	B.A.C. 5663	6½	19 32 43	16 46 50.10	20 13 46.1	N. 69 21	70 N. 36 N.
26	B.A.C. 5700	6½	21 0 35	16 50 30.71	19 21 42.9	N. 7 0	32 N. 31 S.
26	29 Ophiuchi	6	22 55 26	16 55 20.01	S. 18 43 10.7	S. 44 34	16 S. 90 S.
27	ξ Ophiuchi	5	6 24 1	17 14 19.36	20 59 29.4	N. 45 25	69 N. 6 N.
27	B.A.C. 5866	6	7 50 50	17 18 1.46	21 20 8.5	N. 57 58	69 N. 20 N.
27	B.A.C. 5954	6	13 18 7	17 32 3.06	21 50 36.4	N. 60 31	68 N. 23 N.
27	58 Ophiuchi	5	15 7 8	17 36 44.80	21 37 37.3	N. 39 11	64 N. 1 S.
27	B.A.C. 6081	6	21 31 1	17 53 21.72	S. 20 19 52.2	S. 64 7	44 S. 90 S.
27	B.A.C. 6098	6	22 30 55	17 55 57.90	20 44 13.7	S. 43 12	20 S. 90 S.
28	μ Sagittarii	4	2 46 22	18 7 5.51	21 5 11.3	S. 35 12	13 S. 81 S.
28	14 Sagittarii	6	2 57 14	18 7 33.94	21 44 28.4	N. 3 35	22 N. 35 S.
28	15 Sagittarii	5	3 19 58	18 8 33.48	20 45 35.9	S. 56 18	34 S. 90 S.
28	21 Sagittarii	5	7 12 5	18 18 42.17	S. 20 35 59.4	S. 74 56	64 S. 90 S.
28	B.A.C. 6336	6½	11 57 59	18 31 13.59	21 29 22.1	S. 29 28	9 S. 71 S.
28	B.A.C. 6347	6½	12 21 4	18 32 14.35	21 8 41.9	S. 50 37	31 S. 90 S.
28	28 Sagittarii	6	15 9 17	18 39 37.12	22 30 25.3	N. 28 17	44 N. 11 S.
28	30 Sagittarii	6	16 52 16	18 44 8.24	22 17 16.0	N. 14 1	29 N. 24 S.
28	31 Sagittarii	6	17 21 55	18 45 26.34	S. 22 2 57.7	S. 0 31	15 N. 38 S.
28	33 Sagittarii	6	18 5 12	18 47 20.29	21 29 35.1	S. 34 10	16 S. 79 S.
28	ν Sagittarii	5	18 7 18	18 47 25.83	22 52 50.2	N. 49 4	67 N. 10 N.
28	ν Sagittarii	5	18 28 45	18 48 22.30	22 48 31.2	N. 44 39	67 N. 5 N.
28	B.A.C. 6448	6	18 49 1	18 49 15.70	23 18 44.5	N. 74 48	67 N. 53 N.
28	ξ Sagittarii	4	19 30 14	18 51 4.23	S. 21 15 6.1	S. 48 57	31 S. 90 S.
Feb. 2	ψ Aquarii -	4½	5 52 32	23 10 2.70	9 41 43.8	S. 14 45	22 N. 53 S.
2	ψ Aquarii -	4½	6 50 10	23 12 6.33	9 47 31.1	N. 2 2	37 N. 36 S.
2	ψ Aquarii -	5	7 19 35	23 13 9.29	10 13 13.2	N. 33 22	72 N. 7 S.
2	B.A.C. 8214	6½	15 9 46	23 29 46.28	8 4 55.9	S. 3 55	33 N. 42 S.
2	B.A.C. 8274	6	21 24 14	23 42 47.78	S. 7 0 1.4	N. 4 49	42 N. 33 S.
3	30 Piscium -	5	3 56 1	23 56 14.45	6 38 2.5	N. 60 40	83 N. 24 N.
3	33 Piscium -	5	5 35 31	23 59 37.67	6 19 55.8	N. 62 24	84 N. 26 N.
3	B.A.C. 17 -	6	8 2 28	0 4 36.62	5 52 6.8	N. 63 58	84 N. 28 N.

66 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of ☿ and ♀.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of ☿ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ☿ and ♀.	
			h m s	h m s	° ' "	° ' "	° ° S.
Feb. 3	14 Ceti - -	6½	20 36 4	0 29 49.39	S. 1 7 8.6	S. 69 59	39 S. 90 S.
3	15 Ceti - -	6½	21 53 15	0 32 22.61	1 7 1.1	S. 54 39	17 S. 90 S.
4	20 Ceti - -	5½	5 27 27	0 47 18.63	S. 1 45 1.3	N. 74 5	88 N. 50 N.
4	26 Ceti - -	6½	10 57 46	0 58 4.86	N. 0 46 6.0	S. 11 28	27 N. 50 S.
4	29 Ceti - -	6½	13 6 8	1 2 14.88	1 24 32.2	S. 24 33	14 N. 65 S.
4	33 Ceti - -	6	14 25 39	1 4 49.51	N. 1 51 6.7	S. 35 27	4 N. 82 S.
4	35 Ceti - -	6½	15 26 40	1 6 48.02	1 52 54.3	S. 25 14	14 N. 66 S.
4	f Piscium -	5½	18 9 12	1 12 3.16	3 1 37.0	S. 62 5	27 S. 87 S.
5	v Piscium -	4	6 23 13	1 35 38.14	4 55 22.4	S. 34 5	5 N. 78 S.
5	64 Ceti - -	6	21 57 55	2 5 28.31	8 2 48.6	S. 47 33	10 S. 82 S.
5	f Ceti - -	4½	22 49 0	2 7 5.98	N. 8 19 23.6	S. 54 53	19 S. 82 S.
6	B.A.C. 741 -	6½	4 48 35	2 18 33.65	9 12 30.7	S. 43 42	6 S. 81 S.
6	f Ceti - -	4	6 44 3	2 22 14.56	7 57 35.1	N. 51 33	90 N. 17 N.
6	B.A.C. 830 -	6	14 10 29	2 36 29.67	10 15 55.3	S. 9 47	28 N. 45 S.
6	μ Ceti - -	4	15 26 35	2 38 55.66	9 38 33.2	N. 40 27	90 N. 5 N.
7	B.A.C. 987 -	6½	5 7 5	3 5 15.61	N. 12 37 31.1	S. 5 2	33 N. 38 S.
8	B.A.C. 1272 -	6	9 53 21	4 1 37.84	17 2 29.4	S. 25 17	12 N. 57 S.
8	δ Tauri - -	4	17 20 39	4 16 31.66	17 16 49.0	N. 14 36	54 N. 13 S.
8	63 Tauri - -	6	17 36 7	4 17 2.73	16 30 59.8	N. 62 13	90 N. 42 N.
8	B.A.C. 1351 -	6½	17 37 45	4 17 6.02	16 22 8.9	N. 71 15	90 N. 69 N.
8	δ Tauri - -	6	17 55 27	4 17 41.54	N. 17 11 6.6	N. 24 21	67 N. 4 S.
8	B.A.C. 1361 -	6	18 18 52	4 18 28.59	18 47 9.1	S. 69 0	52 S. 71 S.
8	δ Tauri - -	5	18 36 23	4 19 3.84	17 40 21.6	S. 0 11	38 N. 29 S.
8	ε Tauri - -	3½	20 7 48	4 22 7.80	18 55 56.2	S. 65 20	41 S. 71 S.
9	B.A.C. 1468 -	6	4 50 56	4 39 47.61	18 31 53.6	N. 14 48	55 N. 11 S.
9	i Tauri - -	5½	7 20 24	4 44 52.63	N. 18 38 55.2	N. 22 40	65 N. 4 S.
9	B.A.C. 1563 -	5½	14 12 54	4 58 59.57	19 39 4.2	N. 0 55	39 N. 24 S.
9	l Tauri - -	5½	15 18 10	5 1 14.31	20 16 12.4	S. 30 31	6 N. 59 S.
9	B.A.C. 1651 -	6½	21 38 37	5 14 23.38	19 41 55.1	N. 34 55	87 N. 11 N.
10	B.A.C. 1733 -	6½	3 41 45	5 27 2.65	20 23 31.4	N. 19 38	61 N. 3 S.
10	ζ Tauri - -	3½	5 35 5	5 31 0.81	N. 21 4 21.9	S. 13 42	24 N. 36 S.
10	B.A.C. 1835 -	6½	10 40 16	5 41 44.85	20 49 39.7	N. 19 32	61 N. 2 S.
10	χ Orionis -	4½	13 31 50	5 47 48.65	20 15 12.1	N. 63 19	90 N. 51 N.
10	141 Tauri - -	6	16 54 16	5 54 59.45	22 23 44.3	S. 55 16	25 S. 68 S.
10	B.A.C. 1970 -	6½	20 34 50	6 2 50.74	22 12 26.4	S. 34 25	2 N. 60 S.
10	γ Geminor.	3½	23 4 9	6 8 10.85	N. 22 32 14.1	S. 48 31	15 S. 67 S.
11	μ Geminor.	3	2 49 16	6 16 15.01	22 34 7.4	S. 43 3	8 S. 67 S.
11	15 Geminor.	6	5 55 5	6 21 9.79	20 51 22.5	N. 63 28	90 N. 55 N.
11	d Geminor.	6	16 2 25	6 44 54.41	21 53 24.5	N. 11 50	51 N. 4 S.
11	44 Geminor.	6½	22 19 22	6 58 37.98	22 48 6.9	S. 42 45	8 S. 67 S.
12	δ Geminor.	3½	5 6 1	7 13 30.11	N. 22 11 5.7	S. 10 26	27 N. 28 S.
12	63 Geminor.	5½	8 34 53	7 21 9.52	21 40 13.4	N. 16 2	56 N. 2 S.
12	84 Geminor.	6½	20 2 30	7 46 26.22	22 37 13.6	S. 64 58	41 S. 67 S.
13	7 Cancri -	6½	0 57 23	7 57 17.88	22 22 52.7	S. 65 25	41 S. 68 S.
13	μ Cancri -	5½	2 44 28	8 1 14.64	N. 21 54 9.0	S. 42 43	7 S. 68 S.

ELEMENTS OF OCCULTATIONS, 1889. 40

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Feb. 13	B.A.C. 2788	6	^{h m s} 8 27 50	^{h m s} 8 13 53.76	^{° ' "} N.21 5 51.2	^{° ' "} S.16 9	^{° ' "} 21 N. 39 S.
13	B.A.C. 2854	6	13 38 15	8 25 19.81	19 21 34.7	N.65 23	90 N. 50 N.
13	γ Cancri -	6	14 4 35	8 26 17.99	20 48 59.0	S.24 5	14 N. 49 S.
13	35 Cancri -	6½	15 16 43	8 28 57.34	19 58 7.4	N.21 1	62 N. 3 S.
13	39 Cancri -	6	17 26 30	8 33 43.96	20 23 51.6	S.15 29	22 N. 39 S.
13	40 Cancri -	6	17 28 48	8 33 49.01	N.20 21 42.1	S.13 31	24 N. 37 S.
13	ε Cancri -	6	17 36 18	8 34 5.55	19 56 6.6	N.11 26	50 N. 12 S.
13	42 Cancri -	6½	17 43 41	8 34 21.88	20 6 35.5	N. 0 19	38 N. 24 S.
13	B.A.C. 2925	6½	17 49 37	8 34 34.98	19 58 17.1	N. 8 7	47 N. 16 S.
14	80 Cancri -	6½	7 57 47	9 5 43.25	18 29 51.4	N.13 24	52 N. 13 S.
14	83 Cancri -	6	11 11 10	9 12 47.77	N.18 10 26.0	N.10 59	50 N. 16 S.
14	SATURN -	-	12 35 3	9 15 51.72	17 6 43.7	N.64 53	90 N. 43 N.
14	8 Leonis -	6	19 28 14	9 30 55.79	16 56 5.7	N.24 24	66 N. 5 S.
15	34 Leonis -	6	11 27 26	10 5 40.72	13 54 1.1	N.70 42	90 N. 49 N.
15	37 Leonis -	6	13 47 44	10 10 43.97	14 16 47.3	N.26 11	67 N. 7 S.
15	42 Leonis -	6	16 10 53	10 15 52.88	N.15 31 59.3	S.71 40	46 S. 74 S.
15	B.A.C. 3579	6	19 26 6	10 22 53.42	14 54 30.7	S.65 49	33 S. 75 S.
15	ι Leonis -	6	21 0 46	10 26 17.02	14 42 17.7	S.69 15	39 S. 75 S.
16	λ Leonis -	5	5 0 35	10 43 25.99	11 7 51.1	N.63 4	90 N. 31 N.
17	ν Virginis -	6	4 11 46	11 32 44.78	8 44 47.9	S.55 37	16 S. 81 S.
17	ν Virginis -	4½	7 42 12	11 40 9.88	N. 7 8 58.8	S. 1 55	36 N. 39 S.
17	B.A.C. 3996	6	9 15 7	11 43 26.32	5 48 34.3	N.59 43	90 N. 23 N.
17	B.A.C. 4104	6½	19 56 5	12 5 59.86	4 40 12.4	S. 3 56	34 N. 41 S.
18	ε Virginis -	5	0 4 4	12 14 43.26	3 55 46.3	S.11 36	27 N. 49 S.
18	B.A.C. 4254	6	8 35 29	12 32 43.37	N. 2 27 49.3	S.32 25	8 N. 74 S.
19	80 Virginis -	6	11 24 11	13 29 45.05	S. 4 49 50.6	N.58 38	85 N. 19 N.
19	B.A.C. 4572	6	15 17 51	13 38 7.50	4 56 25.9	N.15 14	53 N. 24 S.
20	ξ Libræ -	6	23 15 47	14 48 21.20	11 26 43.2	N.13 4	47 N. 26 S.
21	ξ Libræ -	6	0 19 32	14 50 44.62	10 57 41.5	S.28 11	9 N. 68 S.
21	18 Libræ -	6½	1 16 46	14 52 53.61	10 41 52.5	S.54 55	19 S. 90 S.
21	ο Libræ -	6	11 48 10	15 16 50.01	S.14 44 12.2	N.71 0	75 N. 38 N.
21	γ Libræ -	4½	17 12 45	15 29 18.73	14 25 6.1	S. 4 47	27 N. 43 S.
21	γ Libræ -	6	20 52 27	15 37 49.53	15 19 4.7	N.12 12	43 N. 27 S.
22	θ Libræ -	4½	1 0 23	15 47 30.06	16 24 8.4	N.36 56	70 N. 3 S.
22	49 Libræ -	5½	3 48 8	15 54 5.27	16 12 18.5	S. 1 19	29 N. 39 S.
22	B.A.C. 5408	6½	9 45 56	16 8 14.80	S.18 14 44.4	N.67 21	72 N. 33 N.
22	χ Ophiuchi	6	14 54 33	16 20 34.72	18 12 10.8	N.21 21	49 N. 18 S.
22	24 Scorpii -	5	20 55 31	16 35 8.42	17 31 32.9	S.66 25	41 S. 90 S.
22	B.A.C. 5580	6	21 0 47	16 35 21.23	19 42 39.4	N.64 2	70 N. 29 N.
23	B.A.C. 5663	6½	1 43 14	16 46 50.99	20 13 48.5	N.61 17	70 N. 25 N.
23	B.A.C. 5700	6½	3 13 8	16 50 31.60	S.19 21 45.4	S. 1 1	25 N. 39 S.
23	29 Ophiuchi	6	5 10 43	16 55 20.88	18 43 13.0	S.52 32	25 S. 90 S.
23	ξ Ophiuchi	5	12 50 35	17 14 20.20	20 59 31.2	N.37 43	64 N. 2 S.
23	B.A.C. 5866	6	14 19 42	17 18 2.30	21 20 10.2	N.50 20	69 N. 12 N.
23	B.A.C. 5954	6	19 55 51	17 32 3.88	S.21 50 37.8	N.53 7	68 N. 15 N.

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Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Feb. 23	58 Ophiuchi	5	h m s	h m s	° ' "	° ' "	° N. ° S.
	24 B.A.C. 6081	6	21 47 55	17 36 45.62	S. 21 37 38.6	N. 31 52	55 N. 8 S.
	24 B.A.C. 6088	6	4 22 48	17 53 22.54	20 19 53.4	S. 71 9	56 S. 90 S.
	24 B.A.C. 6098	6	5 5 6	17 55 9.67	22 46 37.6	N. 73 15	67 N. 50 N.
	24 μ Sagittarii	4	5 24 28	17 55 58.72	20 44 14.8	S. 50 11	28 S. 90 S.
	24 14 Sagittarii	6	9 47 27	18 7 6.27	21 5 12.1	S. 41 57	20 S. 90 S.
	24 15 Sagittarii	6	9 58 39	18 7 34.72	S. 21 44 29.1	S. 3 9	16 N. 41 S.
	24 JUPITER-	5	10 22 3	18 8 34.25	20 45 36.7	S. 63 1	44 S. 90 S.
	24 B.A.C. 6336	6½	12 37 22	18 14 18.49	23 4 51.5	N. 70 58	67 N. 43 N.
	24 B.A.C. 6347	6½	19 15 47	18 31 14.32	21 29 22.5	S. 35 42	16 S. 83 S.
	24 28 Sagittarii	6	19 39 35	18 32 15.08	21 8 42.3	S. 56 50	38 S. 90 S.
	25 30 Sagittarii	6	22 32 59	18 39 37.84	S. 22 30 25.4	N. 22 15	38 N. 17 S.
	25 31 Sagittarii	6	0 19 9	18 44 8.98	22 17 16.1	N. 8 5	23 N. 30 S.
	25 33 Sagittarii	6	0 49 43	18 45 27.07	22 2 57.8	S. 6 26	9 N. 45 S.
	25 ν Sagittarii	5	1 34 20	18 47 21.02	21 29 35.2	S. 40 2	22 S. 90 S.
	25 ν Sagittarii	5	1 36 30	18 47 26.56	22 52 50.1	N. 43 13	67 N. 4 N.
	25 B.A.C. 6448	6	1 58 37	18 48 23.03	S. 22 48 31.2	N. 38 49	60 N. 0
	25 ξ Sagittarii	4	2 19 31	18 49 16.43	23 18 44.3	N. 68 59	67 N. 40 N.
	25 B.A.C. 6485	6½	3 2 0	18 51 4.95	21 15 6.2	S. 54 43	38 S. 90 S.
	25 ο Sagittarii	4	4 31 50	18 54 54.42	22 50 58.3	N. 41 16	64 N. 2 N.
	25 B.A.C. 6524	6½	5 44 38	18 58 0.29	21 54 11.0	S. 15 10	1 N. 54 S.
	25 B.A.C. 6539	6	6 37 46	19 0 15.95	S. 22 40 1.0	N. 31 3	49 N. 8 S.
	25 π Sagittarii	3	7 17 11	19 1 56.56	21 9 39.9	S. 58 56	41 S. 90 S.
	25 B.A.C. 6561	6	7 45 17	19 3 8.26	21 11 58.4	S. 56 20	39 S. 90 S.
	25 B.A.C. 6607	6	8 47 55	19 5 48.11	21 50 29.8	S. 17 2	0 56 S.
	25 50 Sagittarii	6	11 59 41	19 13 57.12	22 36 35.1	N. 32 28	51 N. 7 S.
	25 B.A.C. 6671	6	14 14 33	19 19 40.63	S. 21 59 46.4	S. 1 2	17 N. 39 S.
	26 B.A.C. 6889	6	16 3 1	19 24 16.64	21 32 34.6	S. 25 2	5 S. 66 S.
	26 4 Capricor.	6	5 32 38	19 58 24.58	21 37 37.2	N. 18 50	39 N. 20 S.
	26 B.A.C. 7202	6	10 45 29	20 11 28.39	22 9 11.2	N. 72 16	68 N. 47 N.
	27 19 Capricor.	6	23 7 25	20 42 4.73	18 36 30.3	S. 74 4	60 S. 90 S.
	27 20 Capricor.	6	1 44 52	20 48 29.72	S. 18 20 40.4	S. 73 20	57 S. 90 S.
	27 γ Capricor.	5½	3 42 22	20 53 15.96	19 27 58.6	N. 6 53	32 N. 31 S.
Mar. 3	20 Ceti - - -	5½	5 40 46	20 58 3.31	20 17 41.2	N. 70 3	70 N. 40 N.
	26 Ceti - - -	6½	14 54 26	0 47 18.41	S. 1 45 1.7	N. 81 59	88 N. 68 N.
	3 29 Ceti - - -	6½	20 21 11	0 58 4.62	N. 0 46 5.4	S. 3 8	35 N. 41 S.
	3 33 Ceti - - -	6	22 28 3	1 2 14.63	N. 1 24 31.5	S. 16 3	23 N. 55 S.
	4 35 Ceti - - -	6½	23 46 39	1 4 49.25	1 51 5.9	S. 26 52	12 N. 68 S.
	4 f Piscium -	5½	0 46 56	1 6 47.76	1 52 53.5	S. 16 35	22 N. 55 S.
	4 ν Piscium -	4½	3 27 30	1 12 2.89	3 1 36.1	S. 53 13	15 S. 87 S.
	5 64 Ceti - - -	6	15 32 1	1 35 37.83	4 55 21.4	S. 24 25	15 N. 65 S.
	5 ξ Ceti - - -	4½	6 53 55	2 5 27.94	N. 8 2 47.4	S. 37 2	2 N. 81 S.
	5 B.A.C. 741	6½	7 44 17	2 7 5.61	8 19 22.4	S. 44 19	6 S. 82 S.
	5 ξ Ceti - - -	4	13 38 57	2 18 33.27	9 12 29.5	S. 32 51	6 N. 74 S.
	5 B.A.C. 830	6	15 32 51	2 22 14.18	7 57 34.0	N. 62 29	90 N. 32 N.
		6	22 53 22	2 36 29.28	N. 10 15 54.1	N. 1 27	40 N. 33 S.

ELEMENTS OF OCCULTATIONS, 1889. 40

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
			h m s	h m s	° ' "	° ' "	° ' "
Mar. 6	μ Ceti - -	4	0 8 30	2 38 55.25	N. 9 38 32.0	N. 51 44	90° N. 19° N.
6	B.A.C. 987 -	6½	13 39 2	3 5 15.18	12 37 30.0	N. 6 39	45° N. 26° S.
7	B.A.C. 1206	6	10 43 58	3 46 47.85	16 59 37.9	S. 68 52	48° S. 73° S.
7	B.A.C. 1272	6	18 9 56	4 1 37.38	17 2 28.6	S. 13 13	25° N. 43° S.
8	δ Tauri - -	4	1 34 48	4 16 31.18	17 16 48.4	N. 26 40	71° N. 2° S.
8	δ Tauri - -	6	2 9 26	4 17 41.05	N. 17 11 5.9	N. 36 25	89° N. 9° N.
8	B.A.C. 1361	6	2 32 44	4 18 28.10	18 47 8.5	S. 56 55	25° S. 71° S.
8	δ Tauri - -	5	2 50 13	4 19 3.36	17 40 20.9	N. 11 54	51° N. 16° S.
8	α Tauri - -	3½	4 21 13	4 22 7.31	18 55 55.6	S. 53 16	20° S. 71° S.
8	B.A.C. 1468	6	13 2 43	4 39 47.14	18 31 53.2	N. 26 49	71° N. 0
8	ι Tauri - -	5½	15 31 53	4 44 52.16	N. 18 38 54.9	N. 34 39	86° N. 9° N.
8	B.A.C. 1563	5½	22 23 57	4 58 59.11	19 39 4.0	N. 12 48	52° N. 12° S.
8	ι Tauri - -	5½	23 29 13	5 1 13.84	20 16 12.2	S. 18 39	19° N. 44° S.
9	B.A.C. 1651	6½	5 49 51	5 14 22.90	19 41 55.0	N. 46 39	90° N. 25° N.
9	114 Tauri - -	6	8 59 15	5 20 57.52	21 50 25.6	S. 67 48	51° S. 68° S.
9	B.A.C. 1733	6½	11 53 40	5 27 2.19	N. 20 23 31.5	N. 31 14	79° N. 9° N.
9	ζ Tauri - -	3½	13 47 18	5 31 0.35	21 4 22.0	S. 2 9	36° N. 24° S.
9	B.A.C. 1835	6½	18 53 27	5 41 44.40	20 49 40.0	N. 30 57	79° N. 9° N.
10	141 Tauri - -	6	1 8 59	5 54 58.99	22 23 44.8	S. 44 3	9° S. 68° S.
10	B.A.C. 1970	6½	4 50 38	6 2 50.30	22 12 27.0	S. 23 20	14° N. 44° S.
10	6 Geminor.	6	6 7 57	6 5 35.06	N. 22 55 55.5	S. 63 51	41° S. 67° S.
10	η Geminor.	3½	7 20 46	6 8 10.42	22 32 14.8	S. 37 32	2° S. 65° S.
10	μ Geminor.	3	11 7 10	6 16 14.59	22 34 8.1	S. 32 12	4° N. 56° S.
11	δ Geminor.	6	0 25 34	6 44 54.02	21 53 25.3	N. 22 5	65° N. 7° N.
11	44 Geminor.	6½	6 45 20	6 58 37.61	22 48 8.0	S. 32 48	4° N. 54° S.
11	δ Geminor.	3½	13 35 7	7 13 29.79	N. 22 11 6.8	S. 0 52	37° N. 18° S.
11	58 Geminor.	6	15 6 2	7 16 48.16	23 9 27.1	S. 61 1	34° S. 67° S.
11	63 Geminor.	5½	17 5 35	7 21 9.21	21 40 14.5	N. 25 25	69° N. 8° N.
12	84 Geminor.	6½	4 38 28	7 46 25.93	22 37 15.0	S. 56 19	25° S. 67° S.
12	7 Canceri -	6½	9 35 30	7 57 17.63	22 22 54.3	S. 57 6	26° S. 68° S.
12	μ Canceri -	5½	11 23 21	8 1 14.39	N. 21 54 10.3	S. 34 32	3° N. 61° S.
12	B.A.C. 2788	6	17 9 1	8 13 53.55	21 5 52.5	S. 8 23	30° N. 31° S.
12	η Canceri -	6	22 47 49	8 26 17.81	20 49 0.3	S. 16 45	21° N. 41° S.
13	35 Canceri -	6½	0 0 21	8 28 57.15	19 58 8.7	N. 28 15	73° N. 4° N.
13	39 Canceri -	6	2 10 50	8 33 43.78	20 23 52.9	S. 8 26	30° N. 33° S.
13	40 Canceri -	6	2 13 9	8 33 48.83	N. 20 21 43.4	S. 6 28	31° N. 30° S.
13	α Canceri -	6	2 20 41	8 34 5.39	19 56 7.9	N. 18 29	59° N. 6° S.
13	42 Canceri -	6½	2 28 7	8 34 21.71	20 6 36.8	N. 7 22	46° N. 17° S.
13	B.A.C. 2925	6½	2 34 4	8 34 34.81	19 58 18.4	N. 15 9	55° N. 10° S.
13	80 Canceri -	6½	16 45 39	9 5 43.16	18 29 52.5	N. 19 12	59° N. 8° S.
13	SATURN -	-	17 59 45	9 8 25.53	N. 17 40 46.7	N. 59 57	90° N. 36° N.
13	83 Canceri -	6	19 59 29	9 12 47.71	18 10 27.0	N. 16 28	56° N. 11° S.
14	8 Leonis -	6	4 17 5	9 30 55.76	16 56 6.6	N. 29 5	73° N. 1° S.
14	34 Leonis -	6	20 14 29	10 5 40.77	13 54 1.5	N. 73 41	90° N. 57° N.
14	37 Leonis -	6	22 34 12	10 10 44.04	N. 14 16 47.7	N. 28 55	71° N. 5° S.

10 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Mar. 15	42 Leonis -	6	h m s 0 56 39	h m s 10 15 52.96	N. 15 32 0.0	S. 69 13	39 S. 74 S.
15	B.A.C. 3579	6	4 10 44	10 22 53.52	14 54 31.2	S. 63 45	29 S. 75 S.
15	i Leonis -	6	5 44 47	10 26 17.13	14 42 18.2	S. 67 21	35 S. 75 S.
15	l Leonis -	5	13 40 50	10 43 26.14	11 7 50.8	N. 64 0	90 N. 32 N.
16	n Virginis -	6	12 34 58	11 32 45.05	8 44 47.3	S. 57 35	18 S. 81 S.
16	v Virginis -	4½	16 2 2	11 40 10.16	N. 7 8 57.8	S. 4 19	34 N. 41 S.
16	B.A.C. 3996	6	17 33 25	11 43 26.62	5 48 33.1	N. 57 7	90 N. 19 N.
17	B.A.C. 4104	6½	4 2 45	12 6 0.21	4 40 11.0	S. 7 56	31 N. 45 S.
17	c Virginis -	5	8 5 48	12 14 43.62	3 55 44.8	S. 16 7	23 N. 54 S.
17	B.A.C. 4254	6	16 26 23	12 32 43.78	N. 2 27 47.5	S. 38 0	3 N. 83 S.
18	80 Virginis -	6	18 36 43	13 29 45.58	S. 4 49 53.3	N. 49 52	85 N. 8 N.
18	B.A.C. 4572	6	22 24 28	13 38 8.05	4 56 28.6	N. 6 3	43 N. 33 S.
20	f Libræ - -	6	5 34 55	14 48 21.91	11 26 46.3	N. 1 2	35 N. 37 S.
20	f Libræ - -	6	6 37 12	14 50 45.31	10 57 44.4	S. 40 18	2 S. 88 S.
20	18 Libræ - -	6½	7 33 7	14 52 54.30	10 41 55.4	S. 67 6	32 S. 90 S.
20	o Libræ - -	6	17 50 40	15 16 50.74	S. 14 44 15.2	N. 58 10	75 N. 18 N.
20	γ Libræ - -	4½	23 8 43	15 29 19.48	14 25 9.0	S. 17 53	16 N. 56 S.
21	η Libræ - -	6	2 44 14	15 37 50.33	15 19 7.6	S. 1 4	30 N. 39 S.
21	θ Libræ - -	4½	6 47 44	15 47 30.84	16 24 11.1	N. 23 29	54 N. 17 S.
21	49 Libræ - -	5½	9 32 38	15 54 6.06	16 12 21.1	S. 14 52	16 N. 53 S.
21	B.A.C. 5408	6½	15 24 50	16 8 15.61	S. 18 14 46.9	N. 53 37	72 N. 14 N.
21	χ Ophiuchi	6	20 29 12	16 20 35.54	18 12 13.1	N. 7 29	35 N. 31 S.
22	B.A.C. 5580	6	2 31 7	16 35 22.10	19 42 41.6	N. 50 4	70 N. 10 N.
22	B.A.C. 5663	6½	7 10 47	16 46 51.83	20 13 50.4	N. 47 15	70 N. 7 N.
22	B.A.C. 5700	6½	8 39 53	16 50 32.44	19 21 47.1	S. 15 3	11 N. 54 S.
22	29 Ophiuchi	6	10 36 32	16 55 21.72	S. 18 43 14.7	S. 66 34	42 S. 90 S.
22	ξ Ophiuchi	5	18 13 35	17 14 21.06	20 59 32.5	N. 23 41	47 N. 16 S.
22	B.A.C. 5866	6	19 42 18	17 18 3.16	21 20 11.5	N. 36 18	61 N. 4 S.
23	B.A.C. 5954	6	1 17 29	17 32 4.77	21 50 38.9	N. 39 8	64 N. 1 S.
23	58 Ophiuchi	5	3 9 23	17 36 46.51	21 37 39.6	N. 17 54	39 N. 21 S.
23	B.A.C. 6088	6	10 26 45	17 55 10.53	S. 22 46 38.1	N. 59 26	67 N. 23 N.
23	B.A.C. 6098	6	10 46 8	17 55 59.56	20 44 15.4	S. 63 59	44 S. 90 S.
23	μ Sagittarii	4	15 9 55	18 7 7.12	21 5 12.4	S. 55 39	35 S. 90 S.
23	14 Sagittarii	6	15 21 9	18 7 35.57	21 44 29.4	S. 16 51	3 N. 56 S.
23	JUPITER -	-	23 57 45	18 29 24.43	22 58 21.2	N. 40 46	64 N. 2 N.
24	B.A.C. 6336	6½	0 41 29	18 31 15.19	S. 21 29 22.3	S. 49 5	30 S. 90 S.
24	B.A.C. 6347	6½	1 5 27	18 32 15.94	21 8 42.2	S. 70 12	58 S. 90 S.
24	28 Sagittarii	6	4 0 16	18 39 38.71	22 30 25.1	N. 8 59	24 N. 29 S.
24	30 Sagittarii	6	5 47 23	18 44 9.80	22 17 15.6	S. 5 6	11 N. 43 S.
24	31 Sagittarii	6	6 18 15	18 45 27.90	22 2 57.3	S. 19 36	3 S. 59 S.
24	33 Sagittarii	6	7 3 16	18 47 21.84	S. 21 29 34.7	S. 53 10	36 S. 90 S.
24	ν Sagittarii	5	7 5 28	18 47 27.39	22 52 49.5	N. 30 5	47 N. 9 S.
24	ν Sagittarii	5	7 27 48	18 48 23.86	22 48 30.6	N. 25 42	41 N. 13 S.
24	B.A.C. 6448	6	7 48 55	18 49 17.26	23 18 43.7	N. 55 53	67 N. 19 N.
24	ξ Sagittarii	4	8 31 50	18 51 5.77	S. 21 15 5.7	S. 67 47	55 S. 90 S.

ELEMENTS OF OCCULTATIONS, 1889. 41

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
			h m s	h m s	° ' "	° ' "	° ' "
Mar. 24	B.A.C. 6485	6½	10 2 38	18 54 55.24	S. 22 50 57.6	N. 28 16	44 N. 11 S.
24	☿ Sagittarii	4	11 16 14	18 58 1.10	21 54 10.4	S. 28 7	10 S. 71 S.
24	B.A.C. 6524	6½	12 9 59	19 0 16.77	22 40 0.2	N. 18 9	33 N. 21 S.
24	B.A.C. 6539	6	12 49 52	19 1 57.37	21 9 39.2	S. 71 48	61 S. 90 S.
24	☿ Sagittarii	3	13 18 17	19 3 9.06	21 11 57.7	S. 69 10	56 S. 90 S.
24	B.A.C. 6561	6	14 21 41	19 5 48.91	S. 21 50 28.9	S. 29 49	11 S. 73 S.
24	B.A.C. 6607	6	17 35 56	19 13 57.91	22 36 34.1	N. 19 51	37 N. 19 S.
24	☿ Sagittarii	6	19 52 40	19 19 41.41	21 59 45.3	S. 13 32	5 N. 52 S.
24	B.A.C. 6671	6	21 42 44	19 24 17.41	21 32 33.4	S. 37 26	17 S. 87 S.
25	B.A.C. 6889	6	11 25 55	19 58 25.31	21 37 35.4	N. 7 19	28 N. 31 S.
25	4 Capricor.	6	16 44 46	20 11 29.09	S. 22 9 9.2	N. 61 9	68 N. 26 N.
26	20 Capricor.	6	10 3 21	20 53 16.57	19 27 56.2	S. 2 48	23 N. 41 S.
26	☿ Capricor.	5½	12 4 26	20 58 3.91	20 17 38.7	N. 60 34	70 N. 25 N.
26	30 Capricor.	6	17 52 3	21 11 42.60	18 26 57.0	S. 8 27	19 N. 47 S.
26	31 Capricor.	6½	18 0 18	21 12 1.94	17 55 36.7	S. 38 46	9 S. 89 S.
26	☿ Capricor.	4½	19 43 17	21 16 2.63	S. 17 18 27.7	S. 62 51	37 S. 90 S.
27	☿ Capricor.	3½	3 26 38	21 33 55.14	17 9 52.1	S. 9 3	20 N. 47 S.
27	☿ Capricor.	3	6 29 19	21 40 53.39	16 37 53.9	S. 14 50	15 N. 54 S.
27	☿ Aquarii -	4	15 7 26	22 0 25.02	14 24 33.9	S. 69 31	44 S. 90 S.
27	45 Aquarii -	6	20 47 13	22 13 1.88	13 51 42.7	S. 47 29	14 S. 90 S.
27	50 Aquarii -	6	23 15 16	22 18 28.88	S. 14 5 36.4	S. 8 56	24 N. 47 S.
28	B.A.C. 7835	6½	1 47 40	22 24 3.74	13 29 4.3	S. 19 39	15 N. 59 S.
28	70 Aquarii -	6	10 20 47	22 42 38.30	11 8 36.0	S. 70 7	42 S. 90 S.
28	74 Aquarii -	6	12 39 37	22 47 36.56	12 12 32.3	N. 18 56	53 N. 20 S.
28	☿ Aquarii -	4½	23 14 7	23 10 2.96	9 41 41.1	S. 13 44	23 N. 52 S.
29	☿ Aquarii -	4½	0 13 1	23 12 6.58	S. 9 47 28.2	N. 3 17	39 N. 35 S.
29	☿ Aquarii -	5	0 43 2	23 13 9.54	S. 10 13 10.1	N. 34 43	75 N. 5 S.
Apr. 1	☿ Ceti - -	4	23 56 26	2 22 13.95	N. 7 57 33.8	N. 72 27	90 N. 52 N.
2	B.A.C. 830	6	7 15 9	2 36 29.02	10 15 53.7	N. 12 9	51 N. 24 S.
2	☿ Ceti - -	4	8 29 54	2 38 54.99	9 38 31.7	N. 62 33	90 N. 33 N.
2	B.A.C. 987	6½	21 56 8	3 5 14.87	N. 12 37 29.4	N. 18 41	59 N. 16 S.
3	B.A.C. 1119	6	12 2 17	3 33 8.05	16 10 21.7	S. 64 17	35 S. 74 S.
3	B.A.C. 1206	6	18 53 15	3 46 47.47	16 59 37.1	S. 55 19	21 S. 73 S.
4	B.A.C. 1272	6	2 16 35	4 1 36.96	17 2 27.9	N. 0 46	39 N. 29 S.
4	☿ Tauri - -	4	9 39 1	4 16 30.76	17 16 47.8	N. 41 1	90 N. 13 N.
4	☿ Tauri - -	6	10 13 28	4 17 40.63	N. 17 11 5.4	N. 50 48	90 N. 25 N.
4	B.A.C. 1361	6	10 36 40	4 18 27.68	18 47 7.8	S. 42 31	6 S. 71 S.
4	☿ Tauri - -	5	10 54 3	4 19 2.94	17 40 20.3	N. 26 19	70 N. 2 S.
4	☿ Tauri - -	3½	12 24 36	4 22 6.88	18 55 54.9	S. 38 47	2 S. 72 S.
4	B.A.C. 1468	6	21 3 50	4 39 46.69	18 31 52.7	N. 41 40	90 N. 16 N.
4	☿ Tauri - -	5½	23 32 27	4 44 51.71	N. 18 38 54.4	N. 49 36	90 N. 25 N.
5	B.A.C. 1563	5½	6 23 17	4 58 58.62	19 39 3.6	N. 27 58	73 N. 3 N.
5	☿ Tauri - -	5½	7 28 25	5 1 13.35	20 16 11.8	S. 3 27	35 N. 28 S.
5	B.A.C. 1651	6½	13 48 24	5 14 22.43	19 41 54.8	N. 62 1	90 N. 46 N.
5	☿ Tauri - -	6	16 57 37	5 20 57.04	N. 21 50 25.4	S. 52 22	20 S. 68 S.

12 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #).	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and #).	Apparent Declination of #.	Diff. of Apparent Dec. of (and #).	
Apr. 5	B.A.C. 1733	6½	h m s 19 52 0	h m s 5 27 17.1	N.20 23 31.3	N.46 43	90° N. 26° N.
5	ζ Tauri - -	3½	21 45 39	5 30 59.86	21 42 1.8	N.13 23	53° N. 8° S.
6	B.A.C. 1835	6½	2 52 1	5 41 43.89	20 49 39.9	N.46 33	90° N. 27° N.
6	141 Tauri - -	6	9 8 18	5 54 58.49	22 23 44.9	S.28 23	9° N. 52° S.
6	B.A.C. 1970	6½	12 50 39	6 2 49.79	22 12 27.2	S. 7 38	30° N. 28° S.
6	3 Geminor.	6	12 55 2	6 2 59.07	N.23 7 46.3	S.62 47	38° S. 67° S.
6	6 Geminor.	6	14 8 14	6 5 34.56	22 55 55.8	S.48 9	14° S. 67° S.
6	η Geminor.	3½	15 21 19	6 8 9.91	22 32 15.0	S.21 50	16° N. 42° S.
6	μ Geminor.	3	19 8 43	6 16 14.09	22 34 8.4	S.16 29	21° N. 35° S.
7	δ Geminor.	6	8 32 6	6 44 53.52	21 53 26.0	N.37 45	90° N. 22° N.
7	44 Geminor.	6½	14 54 59	6 58 37.12	N.22 48 8.8	S.17 13	20° N. 34° S.
7	8 Geminor.	3½	21 48 43	7 13 29.31	22 11 7.7	N.14 36	55° N. 2° S.
7	58 Geminor.	6	23 20 35	7 16 47.67	23 9 28.1	S.45 36	11° S. 67° S.
8	63 Geminor.	5½	1 21 25	7 21 8.72	21 40 15.6	N.40 47	90° N. 23° N.
8	84 Geminor.	6½	13 2 33	7 46 25.47	22 37 16.3	S.41 17	5° S. 67° S.
8	7 Canceri -	6½	18 3 30	7 57 17.18	N.22 22 55.7	S.42 14	6° S. 68° S.
8	μ Canceri -	5½	19 52 49	8 1 13.95	21 54 11.8	S.19 44	18° N. 42° S.
9	B.A.C. 2788	6	1 43 22	8 13 53.11	21 5 54.1	N. 6 10	45° N. 16° S.
9	η Canceri -	6	7 27 8	8 26 17.40	20 49 1.9	S. 2 29	36° N. 25° S.
9	35 Canceri -	6½	8 40 46	8 28 56.75	19 58 10.3	N.42 28	90° N. 19° N.
9	39 Canceri -	6	10 53 13	8 33 43.38	N.20 23 54.5	N. 5 41	44° N. 18° S.
9	40 Canceri -	6	10 55 34	8 33 48.43	20 21 45.0	N. 7 38	47° N. 16° S.
9	ε Canceri -	6	11 3 12	8 34 4.99	19 56 9.5	N.32 35	81° N. 8° N.
9	42 Canceri -	6½	11 10 46	8 34 21.32	20 6 38.4	N.21 27	63° N. 3° S.
9	B.A.C. 2925	6½	11 16 49	8 34 34.42	19 58 20.0	N.29 14	75° N. 5° N.
10	SATURN -	-	1 22 39	9 5 2.10	N.17 54 57.5	N.69 27	90° N. 54° N.
10	80 Canceri -	6½	1 41 31	9 5 42.80	18 29 54.3	N.32 25	79° N. 5° N.
10	83 Canceri -	6	4 58 24	9 12 47.36	18 10 28.7	N.29 27	74° N. 1° N.
10	8 Leonis -	6	13 23 37	9 30 55.46	16 56 8.3	N.41 26	90° N. 12° N.
11	37 Leonis -	6	7 56 18	10 10 43.82	14 16 49.3	N.39 34	90° N. 6° N.
11	42 Leonis -	6	10 20 33	10 15 52.75	N.15 32 1.8	S.58 49	22° S. 75° S.
11	B.A.C. 3579	6	13 37 2	10 22 53.33	14 54 33.0	S.53 42	16° S. 75° S.
11	ι Leonis -	6	15 12 12	10 26 16.94	14 42 19.9	S.57 29	20° S. 75° S.
11	l Leonis -	5	23 13 24	10 43 26.01	11 7 52.1	N.72 58	90° N. 49° N.
12	α Virginis -	6	22 16 50	11 32 45.03	8 44 48.3	S.51 40	11° S. 81° S.
13	ν Virginis -	4½	1 44 26	11 40 10.16	N. 7 8 58.7	N.1 6	39° N. 36° S.
13	B.A.C. 3996	6	3 16 0	11 43 26.62	5 48 33.7	N.62 19	90° N. 25° N.
13	B.A.C. 4104	6½	13 45 12	12 6 0.28	4 40 11.4	S. 4 20	34° N. 42° S.
13	c Virginis -	5	17 47 33	12 14 43.71	3 55 45.1	S.13 9	26° N. 51° S.
14	B.A.C. 4254	6	2 5 33	12 32 43.91	N. 2 27 47.7	S.36 23	5° N. 80° S.
15	80 Virginis -	6	3 57 26	13 29 45.86	S. 4 49 54.3	N.47 14	85° N. 5° N.
15	B.A.C. 4572	6	7 41 16	13 38 8.37	4 56 29.6	N. 2 48	41° N. 36° S.
16	ε Libræ - -	6	14 8 56	14 48 22.39	11 26 47.8	S. 6 55	28° N. 45° S.
16	ξ Libræ - -	6	15 9 30	14 50 45.79	10 57 45.8	S.48 23	10° S. 90° S.
16	18 Libræ - -	6½	16 3 54	14 52 54.79	S.10 41 56.7	S.75 19	45° S. 90° S.

ELEMENTS OF OCCULTATIONS, 1889. 41

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
			h m s	h m s	° ' "	° ' "	° ' "
Apr. 17	♎ Libræ - -	6	2 34 49	15 16 51.32	S. 14 44 17.0	N. 48 37	75 N. 6 N.
17	♎ Libræ - -	4½	7 12 22	15 29 20.09	14 25 10.5	S. 28 4	6 N. 68 S.
17	♎ Libræ - -	6	10 41 19	15 37 50.92	15 19 9.1	S. 11 41	21 N. 50 S.
17	♎ Libræ - -	4½	14 37 16	15 47 31.46	16 24 12.6	N. 12 26	42 N. 27 S.
17	49 Libræ - -	5½	17 17 3	15 54 6.69	16 12 22.5	S. 26 12	7 N. 66 S.
17	B.A.C. 5408	6½	22 58 15	16 8 16.28	S. 18 14 48.4	N. 41 41	71 N. 0
18	♏ Ophiuchi	6	3 53 1	16 20 36.26	18 12 14.5	S. 4 55	24 N. 43 S.
18	B.A.C. 5580	6	9 43 34	16 35 22.81	19 42 42.8	N. 37 9	65 N. 4 S.
18	B.A.C. 5663	6½	14 14 30	16 46 52.57	20 13 51.4	N. 33 58	60 N. 7 S.
18	B.A.C. 5700	6½	15 40 52	16 50 33.18	19 21 48.1	S. 28 26	0 70 S.
18	B.A.C. 5758	6	19 12 28	16 59 35.13	S. 21 24 31.9	N. 70 9	69 N. 37 N.
19	♏ Ophiuchi	5	0 57 10	17 14 21.87	20 59 33.2	N. 9 38	33 N. 29 S.
19	B.A.C. 5866	6	2 23 16	17 18 3.98	21 20 12.2	N. 22 10	44 N. 18 S.
19	B.A.C. 5954	6	7 48 44	17 32 5.58	21 50 39.3	N. 24 42	46 N. 15 S.
19	58 Ophiuchi	5	9 37 28	17 36 47.32	21 37 39.9	N. 3 22	24 N. 35 S.
19	B.A.C. 6088	6	16 42 54	17 55 11.37	S. 22 46 38.2	N. 44 34	67 N. 4 N.
19	♐ Sagittarii	4	21 18 44	18 7 7.95	21 5 12.1	S. 70 42	55 S. 90 S.
19	14 Sagittarii	6	21 29 42	18 7 36.41	21 44 29.1	S. 31 54	10 S. 76 S.
20	B.A.C. 6336	6½	6 36 38	18 31 16.04	21 29 21.6	S. 64 26	47 S. 90 S.
20	B.A.C. 6343	6	6 48 10	18 31 45.91	23 35 54.6	N. 61 54	66 N. 26 N.
20	JUPITER -	-	8 22 24	18 35 50.03	S. 22 54 58.3	N. 19 19	35 N. 20 S.
20	28 Sagittarii	6	9 51 5	18 39 39.56	22 30 24.2	S. 6 26	10 N. 45 S.
20	30 Sagittarii	6	11 35 57	18 44 10.67	22 17 14.6	S. 20 34	3 S. 60 S.
20	31 Sagittarii	6	12 6 9	18 45 28.76	22 2 56.3	S. 35 3	17 S. 82 S.
20	33 Sagittarii	6	12 50 15	18 47 22.69	21 29 33.7	S. 68 38	55 S. 90 S.
20	♐ Sagittarii	5	12 52 26	18 47 28.26	S. 22 52 48.5	N. 14 36	29 N. 25 S.
20	♐ Sagittarii	5	13 14 18	18 48 24.72	22 48 29.5	N. 10 13	25 N. 29 S.
20	B.A.C. 6448	6	13 35 0	18 49 18.13	23 18 42.6	N. 40 23	61 N. 1 N.
20	B.A.C. 6485	6½	15 46 4	18 54 56.10	22 50 56.4	N. 12 45	27 N. 26 S.
20	♐ Sagittarii	4	16 58 15	18 58 1.96	21 54 9.1	S. 43 39	25 S. 90 S.
20	B.A.C. 6524	6½	17 50 59	19 0 17.63	S. 22 39 58.9	N. 2 36	18 N. 36 S.
20	B.A.C. 6561	6	20 0 17	19 5 49.77	21 50 27.5	S. 45 23	26 S. 90 S.
20	B.A.C. 6607	6	23 11 12	19 13 58.78	22 36 32.5	N. 4 16	20 N. 34 S.
21	50 Sagittarii	6	1 25 44	19 19 42.31	21 59 43.5	S. 29 8	9 S. 72 S.
21	B.A.C. 6671	6	3 14 5	19 24 18.30	21 32 31.6	S. 53 2	33 S. 90 S.
21	B.A.C. 6699	6½	5 4 13	19 28 58.22	S. 23 32 58.7	N. 71 16	66 N. 45 N.
21	B.A.C. 6864	6	15 19 33	19 54 48.03	23 2 26.7	N. 71 11	67 N. 44 N.
21	B.A.C. 6878	6½	16 16 4	19 57 9.10	22 54 19.2	N. 66 36	67 N. 35 N.
21	B.A.C. 6889	6	16 46 59	19 58 26.15	21 37 33.0	S. 8 12	13 N. 47 S.
21	4 Capricor.	6	22 3 3	20 11 29.93	22 9 6.5	N. 45 44	68 N. 6 N.
22	20 Capricor.	6	15 17 16	20 53 17.35	S. 19 27 52.8	S. 17 40	10 N. 57 S.
22	7 Capricor.	5½	17 18 18	20 58 4.69	20 17 35.2	N. 45 46	70 N. 7 N.
22	30 Capricor.	6	23 6 14	21 11 43.35	18 26 53.5	S. 22 58	6 N. 63 S.
22	31 Capricor.	6½	23 14 30	21 12 2.69	17 55 33.2	S. 53 16	25 S. 90 S.
23	7 Capricor.	3½	8 42 58	21 33 55.85	17 9 48.3	S. 23 1	8 N. 63 S.

414 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ° and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of ° and #.	Apparent Declination of #.	Diff. of Apparent Dec. of ° and #.	
Apr. 23	♄ Capricor.	3	h m s 11 46 46	h m s 21 40 54	° ' " 09	S. 16 37 50	2° N. 71 S.
24	45 Aquarii -	6	2 12 0	22 13 2	54	13 51 38	28 S. 90 S.
24	50 Aquarii -	6	4 41 41	22 18 29	53	14 5 32	13 N. 61 S.
24	B.A.C. 7835	6½	7 15 50	22 24 4	35	13 29 0	3 N. 76 S.
24	56 Aquarii -	6	7 22 55	22 24 19	67	15 9 10	75 N. 38 N.
24	74 Aquarii -	6	18 16 15	22 47 37	12	S. 12 12 28	42 N. 31 S.
25	♊ Aquarii -	4½	5 0 14	23 10 3	49	9 41 37	13 N. 64 S.
25	♊ Aquarii -	4½	6 0 3	23 12 7	10	9 47 24	30 N. 45 S.
25	♊ Aquarii -	5	6 30 34	23 13 10	05	10 13 6	62 N. 15 S.
25	B.A.C. 8214	6½	14 37 27	23 29 46	91	8 4 49	28 N. 48 S.
25	B.A.C. 8274	6	21 3 54	23 42 48	31	S. 6 59 55	39 N. 37 S.
26	30 Piscium -	5	3 46 52	23 56 14	89	6 37 56	83 N. 22 N.
26	33 Piscium -	5	5 29 1	23 59 38	09	6 19 50	84 N. 25 N.
26	B.A.C. 17 -	6	7 59 39	0 4 36	99	5 52 1	84 N. 29 N.
26	B.A.C. 81 -	6½	15 10 57	0 18 47	65	2 50 7	9 N. 74 S.
26	14 Ceti - -	6½	20 48 54	0 29 49	56	S. 1 7 5	31 S. 90 S.
26	15 Ceti - -	6½	22 7 23	0 32 22	77	S. 1 6 57	10 S. 90 S.
27	26 Ceti - -	6½	11 21 52	0 58 4	85	N. 0 46 8	37 N. 40 S.
May 1	♈ Tauri - -	4	16 54 51	4 16 30	58	17 16 47	90 N. 24 N.
1	♈ Tauri - -	6	17 29 15	4 17 40	45	17 11 5	90 N. 38 N.
1	B.A.C. 1361	6	17 52 25	4 18 27	49	N. 18 47 7	5 N. 66 S.
1	♈ Tauri - -	5	18 9 46	4 19 2	75	17 40 20	88 N. 8 N.
1	♈ Tauri - -	3½	19 40 12	4 22 6	69	18 55 54	9 N. 60 S.
2	B.A.C. 1468	6	4 18 34	4 39 46	46	18 31 52	90 N. 28 N.
2	♈ Tauri - -	5½	6 46 56	4 44 51	47	18 38 54	90 N. 41 N.
2	B.A.C. 1563	5½	13 36 59	4 58 58	36	N. 19 39 3	90 N. 14 N.
2	♈ Tauri - -	5½	14 42 0	5 1 13	09	20 16 11	47 N. 17 S.
2	105 Tauri - -	6	14 43 23	5 1 15	98	21 33 24	58 S. 68 S.
2	♈ Tauri - -	6	20 10 4	5 12 35	24	21 58 50	49 S. 68 S.
3	114 Tauri - -	6	0 10 15	5 20 56	73	21 50 25	4 S. 68 S.
3	B.A.C. 1733	6½	3 4 24	5 27 1	39	N. 20 23 31	2 N. 58 46
3	♈ Tauri - -	3½	4 57 54	5 30 59	54	21 4 21	7 N. 25 33
3	B.A.C. 1835	6½	10 4 2	5 41 43	57	20 49 39	8 N. 59 3
3	141 Tauri - -	6	16 20 10	5 54 58	14	22 23 44	7 S. 15 30
3	♊ Geminor.	5	17 27 47	5 57 21	33	23 16 3	8 S. 64 44
3	B.A.C. 1970	6½	20 2 33	6 2 49	44	N. 22 12 27	1 N. 5 27
3	3 Geminor.	6	20 6 55	6 2 58	71	23 7 46	1 S. 49 42
3	6 Geminor.	6	21 20 10	6 5 34	19	22 55 55	6 S. 34 59
3	7 Geminor.	3½	22 33 19	6 8 9	54	22 32 15	1 S. 8 37
4	♊ Geminor.	3	2 20 58	6 16 13	71	22 34 8	4 S. 3 4
4	♊ Geminor.	6	15 46 20	6 44 53	12	N. 21 53 26	3 S. N. 51 46
4	B.A.C. 2238	6	15 56 48	6 45 15	47	23 43 55	7 S. 58 40
4	44 Geminor.	6½	22 10 55	6 58 36	70	22 48 9	2 S. 2 57
5	♈ Geminor.	3½	5 7 2	7 13 28	88	22 11 8	2 S. N. 29 6
5	58 Geminor.	6	6 39 30	7 16 47	23	N. 23 9 28	7 S. 31 2

ELEMENTS OF OCCULTATIONS, 1889. 41

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ♄ and ♀.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of ♄ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ♄ and ♀.	
			h m s	h m s	° ' "	° ' "	° ' "
May 5	63 Geminor.	5½	8 41 13	7 21 8.29	N.21 40 16.2	N.55 25	90 N. 41 N.
5	84 Geminor.	6½	20 28 27	7 46 25.04	22 37 17.2	S.26 22	11 N. 49 S.
6	7 Cancrī -	6½	1 32 36	7 57 16.73	22 22 56.7	S.27 13	10 N. 50 S.
6	μ' Cancrī -	6	2 40 52	7 59 42.87	22 57 6.5	S.65 10	42 S. 67 S.
6	μ' Cancrī -	5½	3 23 12	8 1 13.50	21 54 12.8	S. 4 42	34 N. 26 S.
6	B.A.C. 2788	6	9 18 7	8 13 52.68	N.21 55.2	N.21 17	64 N. 1 S.
6	η Cancrī -	6	15 6 41	8 26 16.97	20 49 3.2	N.12 42	53 N. 10 S.
6	35 Cancrī -	6½	16 21 24	8 28 56.32	19 58 11.6	N.57 38	90 N. 38 N.
6	39 Cancrī -	6	18 35 52	8 33 42.96	20 23 55.9	N.20 52	63 N. 4 S.
6	40 Cancrī -	6	18 38 14	8 33 48.01	20 21 46.4	N.22 49	65 N. 2 S.
6	ι Cancrī -	6	18 46 0	8 34 4.56	N.19 56 10.8	N.47 45	90 N. 25 N.
6	42 Cancrī -	6½	18 53 40	8 34 20.89	20 6 39.8	N.36 38	90 N. 12 N.
6	B.A.C. 2025	6½	18 59 49	8 34 33.99	19 58 21.3	N.44 25	90 N. 21 N.
7	80 Cancrī -	6½	9 39 22	9 5 42.40	18 29 55.9	N.47 32	90 N. 21 N.
7	83 Cancrī -	6	12 59 58	9 12 46.97	18 10 30.4	N.44 32	90 N. 17 N.
7	8 Leonis -	6	21 35 24	9 30 55.08	N.16 56 10.1	N.56 20	90 N. 30 N.
8	37 Leonis -	6	16 32 51	10 10 43.48	14 16 51.3	N.53 51	90 N. 22 N.
8	42 Leonis -	6	19 0 30	10 15 52.42	15 32 3.8	S.44 39	6 S. 74 S.
8	B.A.C. 3579	6	22 21 38	10 22 53.01	14 54 35.0	S.39 42	0 76 S.
8	ι Leonis -	6	23 59 3	10 26 16.62	14 42 22.0	S.43 33	4 S. 75 S.
10	ω Virginis -	6	7 47 45	11 32 44.82	N. 8 44 50.3	S.40 3	1 N. 82 S.
10	ν Virginis -	4½	11 19 58	11 40 9.97	7 9 0.4	N.12 22	51 N. 26 S.
10	B.A.C. 3996	6	12 53 32	11 43 26.44	5 48 35.4	N.73 26	90 N. 44 N.
10	B.A.C. 4104	6½	23 35 43	12 6 0.14	4 40 13.0	N. 5 40	44 N. 33 S.
11	ο Virginis -	5	3 42 40	12 14 43.59	3 55 46.7	S. 3 38	35 N. 42 S.
11	B.A.C. 4254	6	12 9 19	12 32 43.84	N. 2 27 49.0	S.27 54	13 N. 68 S.
12	80 Virginis -	6	14 19 12	13 29 45.93	S. 4 49 53.8	N.52 8	85 N. 9 N.
12	B.A.C. 4572	6	18 4 20	13 38 8.45	4 56 29.1	N. 7 8	45 N. 32 S.
13	94 Virginis -	6	3 56 4	14 0 26.33	8 21 49.1	N.77 50	82 N. 45 N.
14	ε' Libræ -	6	0 28 39	14 48 22.66	11 26 48.1	S. 7 14	28 N. 45 S.
14	ε' Libræ -	6	1 28 40	14 50 46.07	S.10 57 46.0	S.48 52	9 S. 90 S.
14	18 Libræ -	6½	2 22 32	14 52 55.07	10 41 56.8	S.75 56	45 S. 90 S.
14	ο' Libræ -	6	12 15 15	15 16 51.66	14 44 17.6	N.46 32	69 N. 4 N.
14	γ Libræ -	4½	17 19 5	15 29 20.46	14 25 11.0	S.30 55	5 N. 72 S.
14	η Libræ -	6	20 44 25	15 37 51.32	15 19 9.6	S.15 1	18 N. 53 S.
15	θ Libræ -	4½	0 35 58	15 47 31.90	S.16 24 13.2	N. 8 33	38 N. 31 S.
15	49 Libræ -	5½	3 12 32	15 54 7.15	16 12 23.0	S.30 27	4 N. 71 S.
15	B.A.C. 5408	6½	8 46 17	16 8 16.78	18 14 49.1	N.36 41	66 N. 5 S.
15	χ Ophiuchi	6	13 34 5	16 20 36.77	18 12 15.0	S.10 33	19 N. 49 S.
15	B.A.C. 5580	6	19 15 38	16 35 23.37	19 42 43.4	N.30 48	57 N. 11 S.
15	B.A.C. 5663	6½	23 39 11	16 46 53.16	S.20 13 52.0	N.27 5	52 N. 14 S.
16	B.A.C. 5700	6½	1 3 8	16 50 33.79	19 21 48.4	S.35 31	6 S. 80 S.
16	B.A.C. 5758	6	4 28 37	16 59 35.76	21 24 32.4	N.62 41	69 N. 24 N.
16	ξ Ophiuchi	5	10 2 58	17 14 22.52	20 59 33.4	N. 1 33	24 N. 37 S.
16	B.A.C. 5866	6	11 26 23	17 18 4.63	S.21 20 12.4	N.13 56	36 N. 26 S.

16 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
			h m s	h m s	° ' "	° ' "	° ' "
May 16	B.A.C. 5954	6	16 41 33	17 32 6.27	S. 21 50 39.3	N. 15 54	37 N. 24 S.
16	58 Ophiuchi	5	18 26 45	17 36 48.01	21 37 39.8	S. 5 36	17 N. 44 S.
17	B.A.C. 6088	6	1 18 8	17 55 12.13	22 46 37.9	N. 34 56	56 N. 6 S.
17	14 Sagittarii	6	5 55 12	18 7 37.19	21 44 28.5	S. 41 58	19 S. 90 S.
17	B.A.C. 6336	6½	14 43 19	18 31 16.82	21 29 20.5	S. 75 13	63 S. 90 S.
17	B.A.C. 6343	6	14 54 27	18 31 46.71	S. 23 35 53.8	N. 51 5	66 N. 11 N.
17	JUPITER-	-	15 7 28	18 32 21.67	23 0 3.0	N. 14 58	30 N. 25 S.
17	26 Sagittarii	6	16 8 59	18 35 6.72	23 56 6.5	N. 69 50	66 N. 38 N.
17	28 Sagittarii	6	17 51 1	18 39 40.36	22 30 23.1	S. 17 28	0 57 S.
17	30 Sagittarii	6	19 32 14	18 44 11.47	22 17 13.4	S. 31 43	13 S. 75 S.
17	31 Sagittarii	6	20 1 24	18 45 29.56	S. 22 2 55.1	S. 46 15	27 S. 90 S.
17	☿ Sagittarii	5	20 46 3	18 47 29.07	22 52 47.3	N. 3 21	19 N. 35 S.
17	☿ Sagittarii	5	21 7 10	18 48 25.54	22 48 28.3	S. 1 4	14 N. 40 S.
17	B.A.C. 6448	6	21 27 9	18 49 18.95	23 18 41.5	N. 29 5	44 N. 11 S.
17	B.A.C. 6485	6½	23 33 41	18 54 56.93	22 50 55.0	N. 1 18	16 N. 37 S.
18	☿ Sagittarii	4	0 43 23	18 58 2.81	S. 21 54 7.6	S. 55 11	36 S. 90 S.
18	B.A.C. 6524	6½	1 34 18	19 0 18.49	22 39 57.4	S. 8 59	7 N. 48 S.
18	B.A.C. 6561	6	3 39 8	19 5 50.63	21 50 25.8	S. 57 7	38 S. 90 S.
18	B.A.C. 6607	6	6 43 30	19 13 59.65	22 36 30.7	S. 7 40	9 N. 46 S.
18	50 Sagittarii	6	8 53 25	19 19 43.15	21 59 41.7	S. 41 11	21 S. 90 S.
18	B.A.C. 6671	6	10 38 5	19 24 19.14	S. 21 32 29.6	S. 65 11	47 S. 90 S.
18	B.A.C. 6699	6½	12 24 33	19 28 59.08	23 32 56.8	N. 59 1	66 N. 21 N.
18	53 Sagittarii	6	14 0 23	19 33 10.52	23 40 33.4	N. 70 26	66 N. 40 N.
18	B.A.C. 6727	6½	14 7 4	19 33 27.98	23 40 45.1	N. 70 54	66 N. 41 N.
18	B.A.C. 6864	6	22 19 38	19 54 48.90	23 2 24.2	N. 58 26	67 N. 21 N.
18	B.A.C. 6878	6½	23 14 21	19 57 9.98	S. 22 54 16.7	N. 53 48	67 N. 15 N.
18	B.A.C. 6889	6	23 44 16	19 58 27.02	21 37 30.4	S. 21 1	2 N. 61 S.
19	4 Capricor.	6	4 50 29	20 11 30.84	22 9 3.5	N. 32 42	55 N. 8 S.
19	20 Capricor.	6	21 35 11	20 53 18.22	19 27 49.2	S. 31 11	3 S. 75 S.
19	☿ Capricor.	5½	23 33 5	20 58 5.56	20 17 31.5	N. 32 14	59 N. 8 S.
20	30 Capricor.	6	5 12 28	21 11 44.24	S. 18 26 49.5	S. 36 35	7 S. 84 S.
20	31 Capricor.	6½	5 20 33	21 12 3.58	17 55 29.0	S. 66 53	42 S. 90 S.
20	☿ Capricor.	3½	14 36 27	21 33 56.70	17 9 44.0	S. 36 41	5 S. 84 S.
20	☿ Capricor.	3	17 36 34	21 40 54.93	16 37 45.7	S. 42 17	10 S. 90 S.
21	29 Aquarii -	6	0 21 26	21 56 22.24	17 29 52.0	N. 71 59	73 N. 43 N.
21	45 Aquarii -	6	7 47 17	22 13 3.35	S. 13 51 34.0	S. 73 42	51 S. 90 S.
21	50 Aquarii -	6	10 14 55	22 18 30.34	14 5 27.5	S. 34 54	0 80 S.
21	B.A.C. 7835	6½	12 47 7	22 24 5.15	13 28 55.5	S. 45 19	10 S. 90 S.
21	56 Aquarii -	6	12 54 6	22 24 20.48	15 9 5.9	N. 56 4	75 N. 17 N.
21	74 Aquarii -	6	23 40 45	22 47 37.89	12 12 23.3	S. 5 22	29 N. 44 S.
22	☿ Aquarii -	4½	10 20 42	23 10 4.23	S. 9 41 32.1	S. 36 26	1 N. 83 S.
22	☿ Aquarii -	4½	11 20 15	23 12 7.84	9 47 19.3	S. 19 16	18 N. 59 S.
22	☿ Aquarii -	5	11 50 38	23 13 10.79	10 13 1.1	N. 12 15	48 N. 27 S.
22	B.A.C. 8214	6½	19 56 15	23 29 47.62	8 4 44.8	S. 21 48	16 N. 62 S.
23	B.A.C. 8274	6	2 22 36	23 42 49.02	S. 6 59 50.6	S. 10 24	28 N. 49 S.

ELEMENTS OF OCCULTATIONS, 1889. 41

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and *.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and *.	Apparent Declination of *.	Diff. of Apparent Dec. of (and *.	
May	23 30 Piscium -	5	h m s 9 6 12	h m s 23 56 15	° ' " S. 6 37 51	° ' " N. 48 15	83° N. 8° N
	23 33 Piscium -	5	10 48 38	23 59 38	6 19 45	50 44	84° N. 11° N
	23 B.A.C. 17 -	6	13 19 46	0 4 37	5 51 56	53 21	84° N. 14° N
	23 B.A.C. 81 -	6½	20 33 0	0 18 48	2 50 2	40 55	1° S. 90° S
	24 14 Ceti - -	6½	2 12 57	0 29 50	1 7 0	75 0	52° S. 90° S
	24 15 Ceti - -	6½	3 31 57	0 32 23	1 6 53	59 6	22° S. 90° S
	24 20 Ceti - -	5½	11 16 2	0 47 19	1 44 53	73 0	88° N. 46° N
	24 26 Ceti - -	6½	16 52 38	0 58 5	0 46 12	10 6	29° N. 49° S
	24 29 Ceti - -	6½	19 3 13	1 2 15	1 24 38	22 13	17° N. 63° S
	24 33 Ceti - -	6	20 24 4	1 4 50	1 51 12	32 33	7° N. 77° S
	24 35 Ceti - -	6½	21 26 4	1 6 48	1 53 0	21 53	18° N. 62° S
	25 f Piscium -	5½	0 11 6	1 12 3	1 42 7	57 32	20° S. 87° S
	25 v Piscium -	4½	12 33 59	1 35 38	4 55 26	24 16	15° N. 65° S
	26 64 Ceti - -	6	4 14 26	2 5 28	8 2 51	31 22	8° N. 73° S
	26 f Ceti - -	4½	5 53 9	2 7 5	8 19 26	38 22	1° N. 82° S
	26 B.A.C. 741 -	6½	11 5 48	2 18 33	9 12 32	24 51	14° N. 64° S
	26 B.A.C. 755 -	6	12 15 49	2 20 47	10 3 50	63 22	31° S. 80° S
	26 f Ceti - -	4	13 1 18	2 22 14	7 57 38	71 7	90° N. 49° N
	26 B.A.C. 830 -	6	20 27 6	2 36 29	10 15 57	12 33	52° N. 24° S
	26 μ Ceti - -	4	21 43 1	2 38 55	9 38 35	63 14	90° N. 34° N
	31 μ Geminor.	3	8 43 1	6 16 13	22 34 8	3 17	42° N. 15° S
	31 d Geminor.	6	22 7 41	6 44 52	21 53 26	58 59	90° N. 49° N
	31 B.A.C. 2238	6	22 18 7	6 45 15	23 43 55	51 26	19° S. 66° S
June	1 44 Geminor.	6½	4 32 6	6 58 36	22 48 9	4 39	44° N. 10° S
	1 d Geminor.	3½	11 28 19	7 13 28	22 11 8	37 6	90° N. 20° N
	1 58 Geminor.	6	13 0 51	7 16 47	23 9 28	22 58	15° N. 42° S
	1 63 Geminor.	5½	15 2 40	7 21 8	21 40 16	63 36	90° N. 55° N
	2 84 Geminor.	6½	2 51 13	7 46 24	22 37 17	17 35	20° N. 38° S
	2 7 Cancri -	6½	7 56 24	7 57 16	22 22 57	18 12	20° N. 39° S
	2 μ Cancri -	6	9 4 54	7 59 42	22 57 6	56 6	25° S. 67° S
	2 μ Cancri -	5½	9 47 25	8 1 13	21 54 13	4 24	43° N. 17° S
	2 B.A.C. 2788	6	15 44 0	8 13 52	21 5 55	30 38	79° N. 8° N
	2 7 Cancri -	6	21 34 38	8 26 16	20 49 3	22 17	65° N. 1° S
	2 35 Cancri -	6½	22 49 51	8 28 56	19 58 12	67 16	90° N. 57° N
	3 39 Cancri -	6	1 5 17	8 33 42	20 23 56	30 35	78° N. 7° N
	3 40 Cancri -	6	1 7 40	8 33 47	20 21 47	32 32	82° N. 9° N
	3 e Cancri -	6	1 15 30	8 34 4	19 56 11	57 29	90° N. 38° N
	3 42 Cancri -	6½	1 23 14	8 34 20	20 6 40	46 21	90° N. 24° N
	3 B.A.C. 2925	6½	1 29 25	8 34 33	19 58 22	54 9	90° N. 33° N
	3 7 Cancri -	4½	2 34 24	8 36 51	21 52 3	65 1	40° S. 68° S
	3 80 Cancri -	6	16 17 13	9 5 42	18 29 57	57 44	90° N. 35° N
	3 83 Cancri -	6	19 40 12	9 12 46	18 10 31	54 49	90° N. 30° N
	4 8 Leonis -	6	4 22 33	9 30 54	16 56 11	66 50	90° N. 47° N
	4 37 Leonis -	6	23 39 42	10 10 43	14 16 52	64 36	90° N. 39° N
	5 42 Leonis -	6	2 10 19	10 15 52	15 32 5	33 53	5° N. 70° S

18 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and *.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and *.	Apparent Declination of *.	Diff. of Apparent Dec. of (and *.	
June 5	B.A.C. 3579	6	h m s	h m s	° ' "	° ' "	
5	i Leonis -	6	5 35 42	10 22 52.68	N. 14 54 36.8	S. 28 55	10° N. 64 S.
6	u Virginis -	6	7 15 15	10 26 16.30	14 42 23.8	S. 32 46	7° N. 69 S.
6	v Virginis -	6	15 53 0	11 32 44.54	8 44 52.3	S. 29 43	11° N. 70 S.
6	v Virginis -	4½	19 31 23	11 40 9.70	7 9 2.4	N. 22 36	63° N. 16 S.
7	π Virginis -	4½	2 52 53	11 55 11.60	7 13 58.2	S. 72 19	41° S. 83 S.
7	B.A.C. 4104	6½	8 9 10	12 5 59.90	N. 4 40 14.9	N. 15 25	54° N. 24 S.
7	c Virginis -	5	12 23 40	12 14 43.36	3 55 48.5	N. 5 56	44° N. 33 S.
7	B.A.C. 4254	6	21 55 2	12 32 43.64	N. 2 27 50.8	S. 18 46	21° N. 58 S.
9	80 Virginis -	6	0 2 10	13 29 45.82	S. 4 49 52.6	N. 59 27	85° N. 18 N.
9	B.A.C. 4572	6	3 53 26	13 38 8.35	4 56 27.9	N. 14 8	52° N. 26 S.
10	ξ Libræ - -	6	10 58 20	14 48 22.72	S. 11 26 47.6	S. 3 1	32° N. 42 S.
10	ξ Libræ - -	6	11 58 54	14 50 46.13	10 57 45.4	S. 44 39	5° S. 90 S.
10	18 Libræ - -	6½	12 54 7	14 52 55.14	10 41 56.2	S. 71 54	37° S. 90 S.
10	o' Libræ - -	6	22 55 1	15 16 51.79	14 44 17.5	N. 49 35	75° N. 7 N.
11	γ Libræ - -	4½	4 8 1	15 29 20.62	14 25 10.8	N. 28 23	7° N. 69 S.
11	η Libræ - -	6	7 29 5	15 37 51.50	S. 15 19 9.5	S. 12 48	20° N. 51 S.
11	θ Libræ - -	4½	11 22 11	15 47 32.10	16 24 13.2	N. 10 22	40° N. 29 S.
11	49 Libræ - -	5½	13 59 34	15 54 7.37	16 12 23.0	S. 28 54	5° N. 69 S.
11	B.A.C. 5408	6½	19 34 21	16 8 17.04	18 14 49.3	N. 37 42	67° N. 5 S.
12	χ Ophiuchi	6	0 22 16	16 20 37.07	18 12 15.1	S. 10 1	19° N. 48 S.
12	B.A.C. 5580	6	6 3 8	16 35 23.71	S. 19 42 43.6	N. 30 47	57° N. 11 S.
12	B.A.C. 5663	6½	10 25 27	16 46 53.53	20 13 52.2	N. 26 39	51° N. 14 S.
12	B.A.C. 5700	6½	11 48 52	16 50 34.15	19 21 48.5	S. 36 3	6 S. 81 S.
12	B.A.C. 5758	6	15 12 52	16 59 36.16	21 24 32.7	N. 61 49	69° N. 22 N.
12	ξ Ophiuchi	5	20 44 2	17 14 22.95	20 59 33.5	N. 0 11	24° N. 39 S.
12	B.A.C. 5866	6	22 63 1	17 18 5.07	S. 21 20 12.4	N. 12 26	34° N. 27 S.
13	B.A.C. 5954	6	3 17 40	17 32 6.76	21 50 39.3	N. 13 57	35° N. 26 S.
13	58 Ophiuchi	5	5 1 23	17 36 48.52	21 37 39.7	S. 7 43	15° N. 46 S.
13	B.A.C. 6088	6	11 46 3	17 55 12.66	22 46 37.8	N. 32 15	53° N. 9 S.
13	B.A.C. 6161	6	15 19 56	18 4 58.68	23 43 19.2	N. 76 46	66° N. 53 N.
13	14 Sagittarii	6	16 17 56	18 7 37.75	S. 21 44 28.2	S. 45 1	22° S. 90 S.
13	JUPITER	-	20 58 47	18 20 29.03	23 10 39.9	N. 29 21	47° N. 12 S.
14	B.A.C. 6343	6	1 5 35	18 31 47.35	23 35 53.3	N. 47 21	66° N. 6 N.
14	26 Sagittarii	6	2 18 22	18 35 7.37	23 56 6.0	N. 66 1	66° N. 30 N.
14	28 Sagittarii	6	3 57 58	18 39 41.02	22 30 22.3	S. 21 26	3° S. 61 S.
14	30 Sagittarii	6	5 36 42	18 44 12.14	S. 22 17 12.6	S. 35 48	16 S. 81 S.
14	31 Sagittarii	6	6 5 8	18 45 30.23	22 2 54.1	S. 50 22	30° S. 90 S.
14	γ Sagittarii	5	6 48 42	18 47 29.75	22 52 46.5	S. 0 49	15° N. 40 S.
14	γ Sagittarii	5	7 9 16	18 48 26.22	22 48 27.4	S. 5 15	10° N. 44 S.
14	B.A.C. 6448	6	7 28 44	18 49 19.63	23 18 40.6	N. 24 53	39° N. 16 S.
14	B.A.C. 6485	6½	9 32 0	18 54 57.62	S. 22 50 54.1	S. 3 4	12° N. 42 S.
14	o Sagittarii	4	10 39 51	18 58 3.48	21 54 6.5	S. 59 38	40° S. 90 S.
14	B.A.C. 6524	6½	11 29 25	19 0 19.16	22 39 56.4	S. 13 29	4° N. 52 S.
14	B.A.C. 6561	6	13 30 53	19 5 51.31	21 50 24.6	S. 61 45	42° S. 90 S.
14	B.A.C. 6607	6	16 30 6	19 14 0.36	S. 22 36 29.5	S. 12 30	6° N. 51 S.

ELEMENTS OF OCCULTATIONS, 1889. 419

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ♀.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ☾ and ♀.	
			^h ^m ^s	^h ^m ^s	[°] ['] ["]	[°] ['] ["]	[°] ['] ["]
June 14	50 Sagittarii	6	18 36 18	19 19 43.86	S. 21 59 40.2	S. 46 10	24 S. 90 S.
14	B.A.C. 6671	6	20 17 56	19 24 19.86	21 32 28.1	S. 70 17	52 S. 90 S.
14	B.A.C. 6699	6½	22 1 15	19 28 59.82	23 32 55.4	N. 53 49	66 N. 14 N.
14	53 Sagittarii	6	23 34 15	19 33 11.27	23 40 32.0	N. 65 8	66 N. 29 N.
14	B.A.C. 6727	6½	23 40 43	19 33 28.73	23 40 43.7	N. 65 36	66 N. 29 N.
15	B.A.C. 6864	6	7 38 3	19 54 49.71	S. 23 2 22.2	N. 52 38	67 N. 12 N.
15	B.A.C. 6878	6½	8 31 2	19 57 10.79	22 54 14.7	N. 47 57	67 N. 7 N.
15	B.A.C. 6889	6	8 59 58	19 58 27.83	21 37 28.1	S. 26 53	4 S. 68 S.
15	4 Capricor.	6	13 56 17	20 11 31.64	22 9 1.3	N. 26 34	48 N. 14 S.
16	17 Capricor.	6	0 47 51	20 39 45.21	21 54 54.1	N. 73 17	68 N. 44 N.
16	20 Capricor.	6	6 7 21	20 53 19.09	S. 19 27 45.8	S. 38 7	9 S. 86 S.
16	7 Capricor.	5½	8 1 15	20 58 6.44	20 17 28.1	N. 25 13	50 N. 15 S.
16	30 Capricor.	6	13 29 8	21 11 45.09	18 26 45.8	S. 43 49	13 S. 90 S.
16	31 Capricor.	6½	13 36 56	21 12 4.42	17 55 25.4	S. 74 7	53 S. 90 S.
16	7 Capricor.	3½	22 34 9	21 33 57.56	17 9 40.0	S. 44 13	12 S. 90 S.
17	8 Capricor.	3	1 28 20	21 40 55.82	S. 16 37 41.5	S. 49 53	17 S. 90 S.
17	29 Aquarii -	6	8 0 1	21 56 23.11	17 29 47.6	N. 64 12	73 N. 27 N.
17	50 Aquarii -	6	17 34 58	22 18 31.20	14 5 22.8	S. 42 51	7 S. 90 S.
17	B.A.C. 7835	6½	20 2 33	22 24 6.02	13 28 50.7	S. 53 19	18 S. 90 S.
17	56 Aquarii -	6	20 9 20	22 24 21.35	15 9 1.1	N. 48 4	75 N. 7 N.
18	74 Aquarii -	6	6 37 29	22 47 38.79	S. 12 12 18.0	S. 13 28	23 N. 52 S.
18	ψ Aquarii -	4½	17 0 45	23 10 5.09	9 41 26.7	S. 44 34	5 S. 90 S.
18	ψ Aquarii -	4½	17 58 52	23 12 8.69	9 47 13.9	S. 27 23	11 N. 68 S.
18	ψ Aquarii -	5	18 28 32	23 13 11.65	10 12 55.8	N. 4 9	39 N. 35 S.
19	B.A.C. 8214	6½	2 23 3	23 29 48.50	8 4 39.1	S. 29 51	9 N. 72 S.
19	B.A.C. 8274	6	8 41 22	23 42 49.86	S. 6 59 45.0	S. 18 24	20 N. 58 S.
19	30 Piscium -	5	15 17 26	23 56 16.39	6 37 46.2	N. 40 22	84 N. 1 S.
19	33 Piscium -	5	16 58 4	23 59 39.58	6 19 39.7	N. 42 53	80 N. 2 N.
19	B.A.C. 17 -	6	19 26 42	0 4 38.47	5 51 50.9	N. 45 34	84 N. 5 N.
20	B.A.C. 81 -	6½	2 33 24	0 18 49.12	2 49 56.7	S. 48 34	9 S. 90 S.
20	15 Ceti - -	6½	9 26 57	0 32 24.21	S. 1 6 47.8	S. 66 32	32 S. 90 S.
20	20 Ceti - -	5½	17 6 7	0 47 20.08	S. 1 44 47.6	N. 65 47	88 N. 31 N.
20	26 Ceti - -	6½	22 39 50	0 58 6.19	N. 0 46 18.1	S. 17 6	22 N. 57 S.
21	29 Ceti - -	6½	0 49 27	1 2 16.20	1 24 44.0	S. 29 9	11 N. 72 S.
21	33 Ceti - -	6	2 9 44	1 4 50.80	1 51 18.2	S. 39 26	1 N. 89 S.
21	35 Ceti - -	6½	3 11 20	1 6 49.30	N. 1 53 5.8	S. 28 44	11 N. 72 S.
21	γ Piscium -	5½	5 55 21	1 12 4.38	3 1 47.8	S. 64 17	29 S. 87 S.
21	γ Piscium -	4½	18 15 10	1 35 39.12	4 55 31.8	S. 30 30	9 N. 74 S.
22	64 Ceti - -	6	9 54 47	2 5 29.02	8 2 55.8	S. 36 53	3 N. 81 S.
22	ξ Ceti - -	4½	10 46 3	2 7 6.67	8 19 30.6	S. 43 50	5 S. 82 S.
22	B.A.C. 741 -	6½	16 46 39	2 18 34.23	N. 9 12 37.0	S. 30 2	9 N. 71 S.
22	B.A.C. 755 -	6	17 56 46	2 20 48.11	10 3 54.2	S. 68 29	40 S. 80 S.
22	ξ Ceti - -	4	18 42 20	2 22 15.11	7 57 42.3	N. 66 1	90 N. 56 N.
23	B.A.C. 830 -	6	2 9 17	2 36 30.10	10 16 0.9	N. 7 50	47 N. 27 S.
23	μ Ceti - -	4	3 25 25	2 38 56.06	N. 9 38 39.2	N. 58 35	90 N. 28 N.

420 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of ☾ and ♀.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of ☾ and ♀.	Apparent Declination of ♀.	Diff. of Apparent Dec. of ☾ and ♀.	
June 23	B.A.C. 987-	6½	h m s	h m s	° ' "	° ' "	° N. ° S.
	VENUS -	-	17 5 6	3 5 15.77	N.12 37 35.1	N.18 29	59 N. 16 S.
	23	-	18 7 53	3 7 17.47	14 6 29.2	S.60 13	27 S. 76 S.
	24	6	7 22 42	3 33 8.80	16 10 25.4	S.60 41	29 S. 74 S.
	24	6	14 18 4	3 46 48.12	16 59 40.3	S.49 58	14 S. 73 S.
	24	6	18 7 55	3 54 24.29	17 52 45.6	S.71 19	59 S. 72 S.
	24	6.	21 45 15	4 1 37.52	N.17 2 30.9	N. 7 57	47 N. 22 S.
	25	4	5 10 42	4 16 31.23	17 16 50.5	N.49 59	90 N. 23 N.
	25	6	5 45 20	4 17 41.10	17 11 8.1	N.59 53	90 N. 37 N.
	25	6	6 8 40	4 18 28.14	18 47 9.8	S.33 20	4 N. 67 S.
	25	5	6 26 8	4 19 3.39	17 40 22.8	N.35 33	88 N. 7 N.
	25	3½	7 57 11	4 22 7.34	N.18 55 56.9	S.29 11	9 N. 61 S.
	25	6	16 38 27	4 39 47.00	18 31 54.6	N.53 12	90 N. 29 N.
	25	5½	19 7 29	4 44 51.99	18 38 56.2	N.61 40	90 N. 43 N.
	29	6	21 34 11	8 13 52.36	21 5 55.9	N.32 48	83 N. 10 N.
	30	6	3 23 54	8 26 16.60	20 49 4.0	N.24 35	69 N. 1 N.
	30	6	6 54 7	8 33 42.58	N.20 23 56.9	N.32 58	83 N. 9 N.
	30	6	6 56 30	8 33 47.63	20 21 47.4	N.34 55	87 N. 11 N.
	30	6	7 4 18	8 34 4.18	19 56 11.9	N.59 52	90 N. 42 N.
	30	6½	7 12 1	8 34 20.51	20 6 40.8	N.48 45	90 N. 26 N.
	30	6½	7 18 12	8 34 33.62	19 58 22.4	N.56 32	90 N. 37 N.
	30	4½	8 23 3	8 36 50.95	N.21 52 3.1	S.62 36	35 S. 68 S.
	30	6½	22 5 4	9 5 41.95	18 29 57.5	N.60 27	90 N. 40 N.
July	1	6	1 28 6	9 12 46.50	18 10 32.1	N.57 36	90 N. 34 N.
	2	3½	0 55 56	10 1 16.39	17 18 14.6	S.72 19	56 S. 73 S.
	2	6	5 33 21	10 10 42.94	14 16 54.0	N.67 47	90 N. 45 N.
	2	6	8 5 1	10 15 51.86	N.15 32 6.6	S.30 40	8 N. 66 S.
	2	6	11 32 1	10 22 52.45	14 54 37.9	S.25 40	14 N. 60 S.
	2	6	13 12 25	10 26 16.07	14 42 24.8	S.29 30	10 N. 65 S.
	3	6	22 17 1	11 32 44.28	8 44 53.9	S.26 20	14 N. 66 S.
	4	4½	1 41 53	11 39 33.95	8 52 31.8	S.74 0	48 S. 81 S.
	4	4½	1 59 37	11 40 9.42	N. 7 9 4.1	N.25 59	67 N. 13 S.
	4	4½	9 30 27	11 55 11.32	7 13 59.8	S.68 59	36 S. 83 S.
	4	6½	14 53 59	12 5 59.63	4 40 16.7	N.18 44	58 N. 20 S.
	4	5	19 14 42	12 14 43.09	3 55 50.3	N. 9 13	48 N. 30 S.
	5	6	4 10 33	12 32 43.36	N. 2 27 52.7	S.15 35	24 N. 54 S.
	6	6	7 55 49	13 29 45.59	S. 4 49 51.0	N.62 14	85 N. 23 N.
	6	6	11 54 41	13 38 8.13	4 56 26.3	N.16 51	55 N. 23 S.
	7	6	20 2 17	14 48 22.58	11 26 46.6	S. 1 0	34 N. 40 S.
	7	6	21 5 19	14 50 46.00	10 57 44.4	S.42 45	4 S. 90 S.
	7	6½	22 1 52	14 52 55.00	10 41 55.2	S.69 56	36 S. 90 S.
	8	6	8 22 0	15 16 51.69	S.14 44 16.9	N.51 18	75 N. 10 N.
	8	4½	13 38 23	15 29 20.55	14 25 10.2	S.26 47	9 N. 67 S.
	8	6	17 11 36	15 37 51.45	15 19 9.0	S.11 18	21 N. 50 S.
	8	4½	21 11 22	15 47 32.06	16 24 12.9	N.11 47	42 N. 28 S.
	8	5½	23 53 5	15 54 7.34	S.16 12 22.6	S.27 33	6 N. 68 S.

ELEMENTS OF OCCULTATIONS, 1889. 421

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
			h m s	h m s	° ' "	° ' "	° °
July 9	B.A.C. 5408	6½	5 36 44	16 8 17.04	S. 18 14 49.2	N. 38 54	68 N. 3 S.
9	☿ Ophiuchi	6	10 31 47	16 20 37.09	18 12 15.0	S. 8 55	20 N. 47 S.
9	B.A.C. 5580	6	16 20 25	16 35 23.77	19 42 43.7	N. 31 45	58 N. 10 S.
9	B.A.C. 5663	6½	20 48 14	16 46 53.62	20 13 52.3	N. 27 31	53 N. 14 S.
9	B.A.C. 5700	6½	22 13 18	16 50 34.25	19 21 48.5	S. 35 14	6 S. 80 S.
10	B.A.C. 5758	6	1 41 6	16 59 36.28	S. 21 24 33.0	N. 62 34	69 N. 24 N.
10	ξ Ophiuchi	5	7 17 50	17 14 23.11	20 59 33.7	N. 0 49	24 N. 38 S.
10	B.A.C. 5866	6	8 41 35	17 18 5.24	21 20 12.7	N. 13 2	35 N. 27 S.
10	B.A.C. 5954	6	13 57 2	17 32 6.96	21 50 39.6	N. 14 27	35 N. 25 S.
10	58 Ophiuchi	5	15 42 0	17 36 48.72	21 37 39.9	S. 7 15	15 N. 46 S.
10	B.A.C. 6088	6	22 30 45	17 55 12.92	S. 22 46 38.1	N. 32 36	53 N. 8 S.
11	B.A.C. 6161	6	2 6 18	18 4 58.97	23 43 19.6	N. 77 2	66 N. 55 N.
11	JUPITER	—	2 21 46	18 5 41.10	23 19 6.9	N. 52 2	67 N. 11 N.
11	14 Sagittarii	6	3 44 0	18 7 38.04	21 44 28.1	S. 44 46	22 S. 90 S.
11	B.A.C. 6343	6	11 54 34	18 31 47.70	23 35 53.4	N. 47 28	66 N. 6 N.
11	26 Sagittarii	6	13 7 27	18 35 7.72	S. 23 56 6.1	N. 66 6	66 N. 30 N.
11	28 Sagittarii	6	14 47 10	18 39 41.39	22 30 22.2	S. 21 22	3 S. 61 S.
11	30 Sagittarii	6	16 25 54	18 44 12.52	22 17 12.4	S. 35 46	16 S. 81 S.
11	31 Sagittarii	6	16 54 21	18 45 30.61	22 2 53.9	S. 50 20	29 S. 90 S.
11	☿ Sagittarii	5	17 37 52	18 47 30.13	22 52 46.3	S. 0 48	15 N. 40 S.
11	☿ Sagittarii	5	17 58 25	18 48 26.60	S. 22 48 27.3	S. 5 14	10 N. 44 S.
11	B.A.C. 6448	6	18 17 53	18 49 20.02	23 18 40.6	N. 24 53	39 N. 16 S.
11	B.A.C. 6485	6½	20 20 57	18 54 58.03	22 50 53.9	S. 3 5	12 N. 42 S.
11	☿ Sagittarii	4	21 28 38	18 58 3.89	21 54 6.1	S. 59 40	41 S. 90 S.
11	B.A.C. 6524	6½	22 18 4	19 0 19.58	22 39 56.1	S. 13 32	4 N. 52 S.
12	B.A.C. 6561	6	0 19 6	19 5 51.75	S. 21 50 24.1	S. 61 50	42 S. 90 S.
12	B.A.C. 6607	6	3 17 30	19 14 0.82	22 36 29.0	S. 12 37	6 N. 51 S.
12	50 Sagittarii	6	5 22 58	19 19 44.34	21 59 39.6	S. 46 19	24 S. 90 S.
12	B.A.C. 6671	6	7 3 55	19 24 20.35	21 32 27.3	S. 70 27	52 S. 90 S.
12	B.A.C. 6699	6½	8 46 28	19 29 0.33	23 32 54.9	N. 53 38	66 N. 13 N.
12	53 Sagittarii	6	10 18 41	19 33 11.79	S. 23 40 31.5	N. 64 56	66 N. 28 N.
12	B.A.C. 6727	6½	10 25 6	19 33 29.25	23 40 43.2	N. 65 24	66 N. 29 N.
12	B.A.C. 6864	6	18 17 26	19 54 50.26	23 2 21.4	N. 52 21	67 N. 12 N.
12	B.A.C. 6878	6½	19 9 45	19 57 11.34	22 54 13.8	N. 47 40	67 N. 7 N.
12	B.A.C. 6889	6	19 38 22	19 58 28.37	21 37 27.1	S. 27 11	4 S. 68 S.
13	4 Capricor.	6	0 30 35	20 11 32.23	S. 22 9 0.1	N. 26 14	47 N. 14 S.
13	17 Capricor.	6	11 11 9	20 39 45.85	21 54 51.5	N. 72 51	68 N. 41 N.
13	20 Capricor.	6	16 24 20	20 53 19.74	19 27 43.8	S. 38 33	9 S. 86 S.
13	☿ Capricor.	5½	18 15 51	20 58 7.10	20 17 26.1	N. 24 47	50 N. 16 S.
13	30 Capricor.	6	23 36 28	21 11 45.77	18 26 43.3	S. 44 17	13 S. 90 S.
13	31 Capricor.	6½	23 44 5	21 12 5.11	S. 17 55 22.9	S. 74 35	53 S. 90 S.
14	7 Capricor.	3½	8 28 21	21 33 58.31	17 9 37.0	S. 44 42	12 S. 90 S.
14	8 Capricor.	3	11 18 3	21 40 56.55	16 37 38.4	S. 50 23	17 S. 90 S.
14	29 Aquarii	6	17 39 20	21 56 23.86	17 29 44.5	N. 63 43	73 N. 25 N.
15	50 Aquarii	6	2 58 12	22 18 32.00	S. 14 5 18.9	S. 43 20	7 S. 90 S.

22 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
July 15	B.A.C. 7835	6½	h m s 5 21 36	h m s 22 24 6.82	S. 13 28 46.6	S. 53 47	18 S. 90 S.
15	56 Aquarii -	6	5 28 12	22 24 22.16	15 8 57.3	N. 47 37	75 N. 6 N.
15	74 Aquarii -	6	15 37 55	22 47 39.58	12 12 13.8	S. 13 53	22 N. 52 S.
16	ψ Aquarii -	4½	1 42 41	23 10 5.92	9 41 21.9	S. 44 56	6 S. 90 S.
16	ψ Aquarii -	4½	2 39 5	23 12 9.53	9 47 9.1	S. 27 45	11 N. 69 S.
16	ψ Aquarii -	5	3 7 51	23 13 12.49	S. 10 12 51.0	N. 3 47	39 N. 35 S.
16	B.A.C. 8214	6½	10 48 20	23 29 49.32	8 4 34.3	S. 30 10	9 N. 72 S.
16	B.A.C. 8274	6	16 55 42	23 42 50.69	6 59 40.0	S. 18 39	20 N. 58 S.
16	30 Piscium -	5	23 20 33	23 56 17.23	6 37 41.1	N. 40 10	84 N. 1 S.
17	33 Piscium -	5	0 58 23	23 59 40.45	6 19 34.3	N. 42 41	82 N. 1 N.
17	B.A.C. 17 -	6	3 22 56	0 4 39.34	S. 5 51 45.5	N. 45 23	84 N. 4 N.
17	B.A.C. 81 -	6½	10 18 10	0 18 49.96	2 49 51.4	S. 48 40	8 S. 90 S.
17	15 Ceti - -	6½	17 1 8	0 32 25.04	1 6 42.4	S. 66 35	31 S. 90 S.
18	20 Ceti - -	5½	0 29 16	0 47 20.95	S. 1 44 42.0	N. 65 49	88 N. 30 N.
18	26 Ceti - -	6½	5 55 24	0 58 7.07	N. 0 46 23.7	S. 17 2	23 N. 56 S.
18	29 Ceti - -	6½	8 2 10	1 2 17.04	N. 1 24 49.4	S. 29 4	11 N. 71 S.
18	33 Ceti - -	6	9 20 45	1 4 51.64	1 51 23.7	S. 39 20	1 N. 89 S.
18	35 Ceti - -	6½	10 21 3	1 6 50.14	1 53 11.2	S. 28 37	12 N. 71 S.
18	f Piscium -	5½	13 1 41	1 12 5.22	3 1 53.1	S. 64 9	28 S. 87 S.
19	v Piscium -	4½	1 7 38	1 35 39.99	4 55 37.2	S. 30 16	10 N. 73 S.
19	64 Ceti - -	6	16 32 59	2 5 29.85	N. 8 3 0.8	S. 36 31	3 N. 80 S.
19	f Ceti - -	4½	17 23 35	2 7 7.50	8 19 35.5	S. 43 28	4 S. 82 S.
19	B.A.C. 741 -	6½	23 19 49	2 18 35.06	9 12 41.8	S. 29 37	10 N. 70 S.
20	B.A.C. 755 -	6	0 29 11	2 20 48.97	10 3 59.1	S. 68 4	38 S. 80 S.
20	f Ceti - -	4	1 14 14	2 22 15.95	7 57 47.3	N. 66 27	90 N. 37 N.
20	B.A.C. 830 -	6	8 36 42	2 36 30.92	N. 10 16 5.5	N. 8 18	47 N. 28 S.
20	μ Ceti - -	4	9 52 9	2 38 56.88	9 38 43.8	N. 59 3	90 N. 27 N.
20	B.A.C. 987 -	6½	23 25 51	3 5 16.56	12 37 39.2	N. 19 1	60 N. 16 S.
21	B.A.C. 1119	6	13 39 39	3 33 9.58	16 10 28.9	S. 60 7	28 S. 74 S.
21	B.A.C. 1206	6	20 33 53	3 46 48.89	16 59 43.5	S. 49 24	13 S. 73 S.
22	B.A.C. 1240	6	0 23 18	3 54 25.08	N. 17 52 48.7	S. 70 45	55 S. 72 S.
22	B.A.C. 1272	6	4 0 20	4 1 38.29	17 2 34.0	N. 8 31	48 N. 21 S.
22	δ Tauri - -	4	11 25 22	4 16 31.96	17 16 53.3	N. 50 31	90 N. 24 N.
22	δ Tauri - -	6	12 0 2	4 17 41.82	17 11 10.9	N. 60 25	90 N. 38 N.
22	B.A.C. 1361	6	12 23 18	4 18 28.87	18 47 12.5	S. 32 48	5 N. 66 S.
22	δ Tauri - -	5	12 40 46	4 19 4.11	N. 17 40 25.5	N. 26 5	89 N. 8 N.
22	ε Tauri - -	3½	14 11 47	4 22 8.05	18 55 59.4	S. 38 39	9 N. 60 S.
22	B.A.C. 1468	6	22 53 3	4 39 47.69	18 31 56.9	N. 53 41	90 N. 30 N.
23	ι Tauri - -	5½	1 22 9	4 44 52.69	18 38 58.5	N. 62 9	90 N. 43 N.
23	B.A.C. 1563	5½	8 13 53	4 58 59.50	19 39 6.8	N. 41 55	90 N. 18 N.
23	VENUS -	-	9 3 43	5 0 42.41	N. 19 44 38.8	N. 40 56	90 N. 16 N.
23	ζ Tauri - -	5½	9 19 6	5 1 14.21	20 16 14.6	N. 10 43	51 N. 14 S.
23	105 Tauri - -	6	9 20 30	5 1 17.11	21 53 27.4	S. 66 22	45 S. 68 S.
23	α Tauri - -	6	14 48 5	5 12 36.29	21 58 52.3	S. 63 39	39 S. 68 S.
23	114 Tauri - -	6	18 48 42	5 20 57.73	N. 21 50 27.0	S. 36 22	0 66 S.

ELEMENTS OF OCCULTATIONS, 1889. 42

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
July	23 B.A.C. 1733	6½	h m s 21 43 2	h m s 5 27 2.33	° ' " N.20 23 33.6	° ' " N.63 13	° ' " 90 N. 50 N.
	23 ζ Tauri - -	3½	23 36 38	5 31 0.46	21 4 23.8	N.30 13	78 N. 8 N.
	24 B.A.C. 1835	6½	4 42 46	5 41 44.43	20 49 41.9	N.64 16	90 N. 53 N.
	24 141 Tauri - -	6	10 58 33	5 54 58.92	22 23 45.7	S. 9 38	29 N. 30 S.
	24 ι Geminor.	5	12 6 4	5 57 22.12	23 16 4.4	S. 58 45	30 S. 67 S.
	24 B.A.C. 1970	6½	14 40 30	6 2 50.16	N.22 12 28.0	N.11 41	52 N. 7 S.
	24 3 Geminor.	6	14 44 52	6 2 59.43	23 7 46.7	S. 43 27	8 S. 67 S.
	24 6 Geminor.	6	15 57 57	6 5 34.90	22 55 56.2	S. 28 38	9 N. 52 S.
	24 γ Geminor.	3½	17 10 54	6 8 10.24	22 32 15.6	S. 2 8	36 N. 20 S.
	24 μ Geminor.	3	20 57 52	6 16 14.34	22 34 9.0	N. 3 45	43 N. 14 S.
	25 δ Geminor.	6	10 19 51	6 44 53.57	N.21 53 26.8	N.59 45	90 N. 50 N.
	25 B.A.C. 2238	6	10 30 14	6 45 15.92	23 43 55.6	S. 50 40	18 S. 66 S.
	29 42 Leonis -	6	13 45 50	10 15 51.79	15 32 6.6	S. 33 13	6 N. 69 S.
	29 B.A.C. 3579	6	17 11 38	10 22 52.36	14 54 38.0	S. 28 20	11 N. 63 S.
	29 ι Leonis -	6	18 51 28	10 26 15.97	14 42 25.0	S. 32 13	7 N. 69 S.
	31 α Virginis -	6	3 50 39	11 32 44.07	N. 8 44 54.8	S. 30 3	10 N. 70 S.
	31 γ Virginis -	4½	7 33 30	11 40 9.21	7 9 5.1	N.22 9	62 N. 16 S.
	31 π Virginis -	4½	15 52 27	11 55 11.09	7 14 0.8	S. 73 1	44 S. 83 S.
	31 B.A.C. 4104	6½	20 30 22	12 5 59.39	4 40 17.9	N.14 33	54 N. 24 S.
Aug.	1 c Virginis -	5	0 52 34	12 14 42.83	3 55 51.6	N. 4 55	44 N. 34 S.
	1 B.A.C. 4254	6	9 52 37	12 32 43.09	N. 2 27 54.0	S. 20 5	20 N. 60 S.
	2 80 Virginis -	6	14 0 44	13 29 45.28	S. 4 49 49.5	N.57 15	85 N. 17 N.
	2 B.A.C. 4572	6	18 4 8	13 38 7.82	4 56 24.9	N.11 49	50 N. 28 S.
	4 ε Libræ - -	6	2 58 55	14 48 22.26	11 26 45.5	S. 6 3	29 N. 45 S.
	4 ε Libræ - -	6	4 3 46	14 50 45.68	10 57 43.3	S. 47 48	10 S. 90 S.
	4 18 Libræ - -	6½	5 1 57	14 52 54.69	S. 10 41 54.0	S. 74 58	48 S. 90 S.
	4 α Libræ - -	6	15 40 54	15 16 51.39	14 44 16.1	N.46 23	75 N. 5 N.
	4 γ Libræ - -	4½	21 7 17	15 29 20.27	14 25 9.4	S. 31 37	4 N. 74 S.
	5 η Libræ - -	6	0 47 23	15 37 51.16	15 19 8.3	S. 16 4	17 N. 55 S.
	5 θ Libræ - -	4½	4 54 59	15 47 31.79	16 24 12.3	N. 7 6	37 N. 32 S.
	5 49 Libræ - -	5½	7 42 0	15 54 7.07	S. 16 12 22.1	S. 32 9	1 N. 75 S.
	5 B.A.C. 5408	6½	13 37 4	16 8 16.80	18 14 48.9	N.34 27	64 N. 7 S.
	5 χ Ophiuchi	6	18 41 59	16 20 36.87	18 12 14.7	S. 13 15	16 N. 52 S.
	6 B.A.C. 5580	6	0 42 14	16 35 23.55	19 42 43.6	N.27 36	54 N. 13 S.
	6 B.A.C. 5663	6½	5 18 56	16 46 53.42	20 13 52.4	N.23 31	49 N. 17 S.
	6 B.A.C. 5700	6½	6 46 48	16 50 34.06	S. 19 21 48.4	S. 39 11	10 S. 89 S.
	6 B.A.C. 5758	6	10 21 24	16 59 36.10	21 24 33.3	N.58 45	69 N. 20 N.
	6 ξ Ophiuchi	5	16 8 59	17 14 22.96	20 59 33.9	S. 2 48	21 N. 42 S.
	6 B.A.C. 5866	6	17 35 23	17 18 5.10	21 20 13.0	N. 9 29	32 N. 30 S.
	6 B.A.C. 5954	6	23 0 41	17 32 6.85	21 50 40.0	N.11 7	33 N. 28 S.
	7 58 Ophiuchi	5	0 48 50	17 36 48.61	S. 21 37 40.3	S. 10 30	12 N. 49 S.
	7 B.A.C. 6088	6	7 49 43	17 55 12.85	22 46 38.7	N.29 39	49 N. 11 S.
	7 JUPITER -	-	7 50 5	17 55 13.79	23 23 13.0	N.66 12	67 N. 30 N.
	7 B.A.C. 6161	6	11 31 23	18 4 58.92	23 43 20.3	N.74 16	66 N. 48 N.
	7 14 Sagittarii	6	12 31 22	18 7 38.00	S. 21 44 28.6	S. 47 30	24 S. 90 S.

424 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Aug. 7	B.A.C. 6343	6	h m s	h m s	° ' "	° ' "	° ' "
7	26 Sagittarii	6	21 35 13	18 31 47.71	S. 23 35 54.1	N. 45 10	66 N. 4 N.
8	28 Sagittarii	6	22 49 57	18 35 7.75	23 56 6.9	N. 63 53	66 N. 28 N.
8	30 Sagittarii	6	0 32 5	18 39 41.41	22 30 22.8	S. 23 30	5 S. 64 S.
8	31 Sagittarii	6	2 13 10	18 44 12.56	22 17 12.9	S. 37 49	19 S. 86 S.
8	♄ Sagittarii	6	2 42 17	18 45 30.65	22 2 54.4	S. 52 22	33 S. 90 S.
8	♄ Sagittarii	5	3 26 48	18 47 30.18	S. 22 52 46.9	S. 2 47	13 N. 42 S.
8	♄ Sagittarii	5	3 47 50	18 48 26.66	22 48 27.9	S. 7 12	8 N. 46 S.
8	B.A.C. 6448	6	4 7 44	18 49 20.08	23 18 41.2	N. 22 56	37 N. 17 S.
8	B.A.C. 6485	6½	6 13 36	18 54 58.10	22 50 54.5	S. 4 55	10 N. 44 S.
8	♄ Sagittarii	4	7 22 46	18 58 3.97	21 54 6.5	S. 61 27	43 S. 90 S.
8	B.A.C. 6524	6½	8 13 16	19 0 19.67	S. 22 39 56.6	S. 15 16	2 N. 54 S.
8	B.A.C. 6561	6	10 16 52	19 5 51.84	21 50 24.5	S. 63 27	46 S. 90 S.
8	B.A.C. 6607	6	13 18 51	19 14 0.93	22 36 29.5	S. 14 4	4 N. 53 S.
8	50 Sagittarii	6	15 26 44	19 19 44.46	21 59 40.0	S. 47 39	26 S. 90 S.
8	B.A.C. 6671	6	17 9 33	19 24 20.49	21 32 27.6	S. 71 41	56 S. 90 S.
8	B.A.C. 6699	6½	18 53 55	19 29 0.48	S. 23 32 55.5	N. 52 30	66 N. 13 N.
8	53 Sagittarii	6	20 27 42	19 33 11.95	23 40 32.1	N. 63 54	66 N. 27 N.
8	B.A.C. 6727	6½	20 34 14	19 33 29.41	23 40 43.8	N. 64 22	66 N. 28 N.
9	B.A.C. 6864	6	4 33 44	19 54 50.48	23 2 21.8	N. 51 48	67 N. 12 N.
9	B.A.C. 6878	6½	5 26 44	19 57 11.57	22 54 14.2	N. 47 10	67 N. 6 N.
9	B.A.C. 6889	6	5 55 42	19 58 28.60	S. 21 37 27.2	S. 27 39	4 S. 69 S.
9	4 Capricor.	6	10 51 25	20 11 32.48	22 9 0.3	N. 26 4	47 N. 14 S.
9	17 Capricor.	6	21 37 26	20 39 46.17	21 54 51.5	N. 73 22	68 N. 43 N.
10	20 Capricor.	6	2 52 11	20 53 20.10	19 27 43.2	S. 37 41	9 S. 85 S.
10	♄ Capricor.	5½	4 44 6	20 58 7.48	20 17 25.7	N. 25 46	50 N. 15 S.
10	30 Capricor.	6	10 5 18	21 11 46.18	S. 18 26 42.4	S. 42 57	11 S. 90 S.
10	31 Capricor.	6½	10 12 56	21 12 5.51	17 55 21.9	S. 73 14	50 S. 90 S.
10	♄ Capricor.	3½	18 56 35	21 33 58.74	17 9 35.8	S. 42 46	10 S. 90 S.
10	♄ Capricor.	3	21 45 41	21 40 57.00	16 37 37.1	S. 48 15	15 S. 90 S.
11	29 Aquarii -	6	4 4 54	21 56 24.36	17 29 43.0	N. 66 17	73 N. 28 N.
11	50 Aquarii -	6	13 19 4	22 18 32.52	S. 14 5 16.8	S. 40 9	4 S. 89 S.
11	B.A.C. 7835	6½	15 40 56	22 24 7.35	13 28 44.4	S. 50 26	14 S. 90 S.
11	56 Aquarii -	6	15 47 25	22 24 22.69	15 8 55.3	N. 50 57	75 N. 9 N.
12	74 Aquarii -	6	1 49 24	22 47 40.18	12 12 11.1	S. 9 53	25 N. 48 S.
12	♄ Aquarii -	4½	11 44 36	23 10 6.53	9 41 18.9	S. 40 16	1 S. 88 S.
12	♄ Aquarii -	4½	12 40 1	23 12 10.15	S. 9 47 6.0	S. 23 2	15 N. 62 S.
12	♄ Aquarii -	5	13 8 16	23 13 13.10	10 12 48.0	N. 8 32	44 N. 31 S.
12	B.A.C. 8214	6½	20 40 15	23 29 49.96	8 4 30.8	S. 24 57	14 N. 65 S.
13	B.A.C. 8274	6	2 40 16	23 42 51.37	6 59 36.3	S. 13 6	25 N. 52 S.
13	30 Piscium -	5	8 56 58	23 56 17.93	6 37 37.2	N. 46 4	83 N. 4 N.
13	33 Piscium -	5	10 32 42	23 59 41.13	S. 6 19 30.5	N. 48 41	84 N. 7 N.
13	B.A.C. 17 -	6	12 54 2	0 4 40.03	5 51 41.7	N. 51 30	84 N. 10 N.
13	B.A.C. 81 -	6½	19 39 55	0 18 50.67	2 49 47.2	S. 42 13	1 S. 90 S.
14	14 Ceti - -	6½	0 59 16	0 29 52.64	1 6 45.2	S. 75 50	47 S. 90 S.
14	15 Ceti - -	6½	2 13 33	0 32 25.79	S. 1 6 37.9	S. 59 49	20 S. 90 S.

ELEMENTS OF OCCULTATIONS, 1889. 425

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Aug. 14	20 Ceti - -	5½	h m s 9 31 6	h m s 0 47 21.69	S. 1 44 37.6	N. 72 53	88 N. 41 N.
14	26 Ceti - -	6½	14 49 31	0 58 7.82	N. 0 46 28.3	S. 9 45	30 N. 48 S.
14	29 Ceti - -	6½	16 53 18	1 2 17.80	1 24 54.0	S. 21 43	19 N. 61 S.
14	33 Ceti - -	6	18 10 1	1 4 52.40	1 51 28.3	S. 31 55	9 N. 75 S.
14	35 Ceti - -	6½	19 8 54	1 6 50.90	1 53 15.8	S. 21 11	19 N. 61 S.
14	f Piscium -	5½	21 45 46	1 12 5.99	N. 3 1 57.8	S. 56 37	17 S. 87 S.
15	γ Piscium -	4	9 34 56	1 35 40.77	4 55 41.8	S. 22 24	18 N. 62 S.
16	64 Ceti - -	6	0 40 12	2 5 30.69	8 3 5.6	S. 28 22	12 N. 69 S.
16	f Ceti - -	4½	1 29 45	2 7 8.34	8 19 40.3	S. 35 18	5 N. 78 S.
16	B.A.C. 741 -	6½	7 18 49	2 18 35.91	9 12 46.6	S. 21 24	18 N. 59 S.
16	B.A.C. 755 -	6	8 26 48	2 20 49.79	N. 10 4 3.6	S. 59 49	23 S. 80 S.
16	f Ceti - -	4	9 10 59	2 22 16.76	7 57 51.8	N. 74 42	90 N. 56 N.
16	B.A.C. 830 -	6	16 25 13	2 36 31.75	10 16 10.0	N. 16 36	56 N. 20 S.
16	38 Arietis -	5	17 38 27	2 38 56.00	11 58 47.9	S. 72 48	49 S. 78 S.
16	μ Ceti - -	4	17 39 19	2 38 57.70	9 38 48.2	N. 67 21	90 N. 39 N.
17	B.A.C. 987 -	6½	6 59 43	3 5 17.43	N. 12 37 43.5	N. 27 18	71 N. 8 S.
17	B.A.C. 1119 -	6	21 1 57	3 33 10.42	16 10 32.6	S. 51 58	16 S. 74 S.
18	B.A.C. 1206 -	6	3 51 33	3 46 49.76	16 59 47.1	S. 41 21	3 S. 70 S.
18	B.A.C. 1240 -	6	7 38 39	3 54 25.92	17 52 52.0	S. 62 46	32 S. 72 S.
18	B.A.C. 1272 -	6	11 13 39	4 1 39.13	17 2 37.2	N. 16 25	57 N. 13 S.
18	δ Tauri - -	4	18 35 1	4 16 32.78	N. 17 16 56.3	N. 58 15	90 N. 34 N.
18	δ Tauri - -	6	19 9 25	4 17 42.65	17 11 13.9	N. 68 9	90 N. 53 N.
18	B.A.C. 1361 -	6	19 32 33	4 18 29.71	18 47 15.3	S. 25 4	13 N. 56 S.
18	δ Tauri - -	5	19 49 52	4 19 4.94	17 40 28.5	N. 43 48	90 N. 15 N.
18	ε Tauri - -	3½	21 20 15	4 22 8.88	18 56 2.4	S. 20 59	17 N. 50 S.
19	B.A.C. 1468 -	6	5 58 21	4 39 48.53	N. 18 31 59.5	N. 61 7	90 N. 41 N.
19	ε Tauri - -	5½	8 26 40	4 44 53.51	18 39 1.0	N. 69 30	90 N. 60 N.
19	ε Tauri - -	5	14 3 16	4 56 28.38	21 25 49.6	S. 64 24	39 S. 69 S.
19	B.A.C. 1563 -	5½	15 16 36	4 59 0.30	19 39 9.0	N. 49 4	90 N. 25 N.
19	ι Tauri - -	5½	16 21 35	5 1 15.02	20 16 16.7	N. 17 50	59 N. 8 S.
19	105 Tauri - -	6	16 22 58	5 1 17.92	N. 21 33 29.4	S. 59 16	29 S. 68 S.
19	η Tauri - -	6	21 49 29	5 12 37.09	21 58 54.0	S. 56 45	25 S. 68 S.
20	114 Tauri - -	6	1 49 28	5 20 58.54	21 50 28.6	S. 29 37	8 N. 56 S.
20	ζ Tauri - -	3½	6 36 48	5 31 1.26	21 4 25.3	N. 36 47	90 N. 15 N.
20	141 Tauri - -	6	17 57 47	5 54 59.66	22 23 46.7	S. 3 33	35 N. 23 S.
20	1 Geminor.	5	19 5 13	5 57 22.82	N. 23 16 5.2	S. 52 43	20 S. 67 S.
20	B.A.C. 1970 -	6½	21 39 34	6 2 50.88	22 12 28.8	N. 17 36	59 N. 2 S.
20	3 Geminor.	6	21 43 56	6 3 0.17	23 7 47.4	S. 37 32	1 S. 65 S.
20	6 Geminor.	6	22 56 58	6 5 35.62	22 55 56.9	S. 22 46	15 N. 44 S.
21	γ Geminor.	3½	0 9 53	6 8 10.98	22 32 16.3	N. 3 40	43 N. 15 S.
21	μ Geminor.	3	3 56 46	6 16 15.08	N. 22 34 9.5	N. 9 23	49 N. 8 S.
21	δ Geminor.	6	17 18 34	6 44 54.21	21 53 26.9	N. 64 41	90 N. 59 N.
21	B.A.C. 2238 -	6	17 28 58	6 45 16.58	23 43 55.5	S. 45 44	11 S. 66 S.
21	44 Geminor.	6½	23 41 2	6 58 37.67	22 48 8.9	N. 10 7	50 N. 6 S.
22	δ Geminor.	3½	6 34 38	7 13 29.75	N. 22 11 7.9	N. 42 16	90 N. 26 N.

26 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of C and *.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of C and *.	Apparent Declination of *.	Diff. of Apparent Dec. of C and *.	
Aug. 22	58 Geminor.	6	^{h m s} 8 6 31	^{h m s} 7 16 48.07	^{° ' "} N.23 9 27.8	^{° ' "} S.17 51	^{° ' "} 20 N. 35 S.
22	63 Geminor.	5½	10 7 25	7 21 9.08	21 40 16.1	N.68 36	90 N. 66 N.
22	84 Geminor.	6½	21 49 54	7 46 25.61	22 37 16.1	S.13 11	25 N. 33 S.
23	7 Cancrī -	6½	2 52 0	7 57 17.23	22 22 55.6	S.14 6	24 N. 35 S.
23	μ' Cancrī -	6	3 59 49	7 59 43.35	22 57 5.1	S.52 4	19 S. 67 S.
23	μ' Cancrī -	5½	4 41 52	8 1 13.97	N.21 54 11.9	N. 8 23	48 N. 13 S.
23	B.A.C. 2788	6	10 34 29	8 13 53.03	21 5 54.6	N.34 14	86 N. 12 N.
23	γ Cancrī -	6	16 20 57	8 26 17.21	20 49 2.6	N.25 28	70 N. 2 N.
23	39 Cancrī -	6	19 49 1	8 33 43.13	20 23 55.5	N.33 31	84 N. 9 N.
23	40 Cancrī -	6	19 51 22	8 33 48.18	20 21 46.0	N.35 28	88 N. 11 N.
23	ε Cancrī -	6	19 59 6	8 34 4.73	N.19 56 10.6	N.60 24	90 N. 42 N.
23	42 Cancrī -	6½	20 6 43	8 34 21.06	20 6 39.5	N.49 16	90 N. 26 N.
23	B.A.C. 2925	6½	20 12 50	8 34 34.16	19 58 21.1	N.57 3	90 N. 37 N.
23	γ Cancrī -	4½	21 17 1	8 36 51.51	21 52 1.2	S.62 11	34 S. 68 S.
28	ε Virginis-	5	6 43 8	12 14 42.67	3 55 51.9	S. 2 30	36 N. 41 S.
28	B.A.C. 4254	6	15 37 21	12 32 42.89	N. 2 27 54.5	S.28 13	13 N. 70 S.
29	80 Virginis -	6	19 32 22	13 29 44.99	S. 4 49 48.5	N.47 13	85 N. 6 N.
29	B.A.C. 4572	6	23 34 44	13 38 7.51	4 56 23.8	N. 1 34	40 N. 37 S.
30	94 Virginis-	6	10 13 51	14 0 25.41	8 21 44.3	N.70 37	82 N. 36 N.
31	ε' Libræ - -	6	8 31 54	14 48 21.88	11 26 44.4	S. 17 33	19 N. 57 S.
31	ε' Libræ - -	6	9 37 11	14 50 45.30	S.10 57 42.2	S.59 18	23 S. 90 S.
31	ε' Libræ - -	6	20 26 41	15 14 49.68	15 8 51.6	N.69 10	75 N. 34 N.
31	ε' Libræ - -	6	21 20 34	15 16 50.99	14 44 15.1	N.34 44	70 N. 7 S.
Sept. 1	γ Libræ - -	4½	2 50 52	15 29 19.85	14 25 8.5	S.43 17	8 S. 90 S.
1	γ Libræ - -	6	6 33 55	15 37 50.75	15 19 7.5	S.27 44	7 N. 69 S.
1	θ Libræ - -	4½	10 45 14	15 47 31.37	S.16 24 11.6	S. 4 33	27 N. 43 S.
1	49 Libræ - -	5½	13 34 58	15 54 6.66	16 12 21.3	S.43 47	10 S. 90 S.
1	B.A.C. 5408	6½	19 36 16	16 8 16.38	18 14 48.3	N.22 55	51 N. 17 S.
2	χ Ophiuchi	6	0 47 4	16 20 36.44	18 12 14.2	S.24 41	6 N. 66 S.
2	B.A.C. 5580	6	6 54 54	16 35 23.14	19 42 43.4	N.16 20	43 N. 24 S.
2	B.A.C. 5663	6½	11 37 52	16 46 53.01	S.20 13 52.2	N.12 24	37 N. 27 S.
2	B.A.C. 5700	6½	13 7 49	16 50 33.66	19 21 48.3	S.50 15	22 S. 90 S.
2	B.A.C. 5758	6	16 47 37	16 59 35.70	21 24 33.3	N.47 49	69 N. 7 N.
2	ξ Ophiuchi	5	22 44 0	17 14 22.58	20 59 34.0	S. 13 30	11 N. 53 S.
3	B.A.C. 5866	6	0 12 40	17 18 4.70	21 20 13.1	S. 1 9	22 N. 40 S.
3	B.A.C. 5954	6	5 46 44	17 32 6.46	S.21 50 40.3	N. 0 45	22 N. 38 S.
3	58 Ophiuchi	5	7 37 54	17 36 48.24	21 37 40.6	S.20 46	3 N. 61 S.
3	JUPITER -	-	14 18 57	17 53 51.02	23 26 40.1	N.61 36	67 N. 25 N.
3	B.A.C. 6088	6	14 50 45	17 55 12.51	22 46 39.2	N.19 46	39 N. 20 S.
3	B.A.C. 6161	6	18 38 54	18 4 58.58	23 43 21.0	N.64 36	66 N. 30 N.
3	14 Sagittarii	6	19 40 40	18 7 37.67	S.21 44 29.1	S.57 6	36 S. 90 S.
4	24 Sagittarii	6	3 13 21	18 27 8.36	24 6 49.0	N.69 31	66 N. 39 N.
4	B.A.C. 6343	6	5 052	18 31 47.41	23 35 55.0	N.36 11	55 N. 4 S.
4	26 Sagittarii	6	6 17 52	18 35 7.45	23 56 7.9	N.54 59	66 N. 17 N.
4	28 Sagittarii	6	8 3 7	18 39 41.13	S.22 30 23.6	S.32 17	14 S. 77 S.

ELEMENTS OF OCCULTATIONS, 1889. 427

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in B.A. of C and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of C and #.	Apparent Declination of #.	Diff. of Apparent Dec. of C and #.	
			h m s	h m s	° ' "	"	° °
Sept. 4	30 Sagittarii	6	9 47 19	18 44 12.28	S. 22 17 13.7	S. 46 28	28 S. 90 S.
4	31 Sagittarii	6	10 17 18	18 45 30.38	22 2 55.2	S. 60 59	44 S. 90 S.
4	1 Sagittarii	5	11 3 12	18 47 29.91	22 52 47.9	S. 11 20	5 N. 50 S.
4	2 Sagittarii	5	11 24 53	18 48 26.39	22 48 28.8	S. 15 44	1 N. 55 S.
4	B.A.C. 6448	6	11 45 24	18 49 19.81	23 18 42.2	N. 14 26	28 N. 25 S.
4	B.A.C. 6485	6½	13 55 6	18 54 57.84	S. 22 50 55.4	S. 13 16	3 N. 53 S.
4	• Sagittarii	4	15 6 24	18 58 3.72	21 54 7.4	S. 69 42	56 S. 90 S.
4	B.A.C. 6524	6½	15 58 27	19 0 19.42	22 39 57.6	S. 23 27	6 S. 65 S.
4	B.A.C. 6561	6	18 5 49	19 5 51.60	21 50 25.4	S. 71 28	59 S. 90 S.
4	B.A.C. 6607	6	21 13 23	19 14 0.71	22 36 30.6	S. 21 50	3 S. 62 S.
4	2 Sagittarii	6	23 3 50	19 18 48.69	S. 24 10 39.6	N. 75 8	66 N. 55 N.
4	50 Sagittarii	6	23 25 10	19 19 44.26	21 59 41.0	S. 55 14	35 S. 90 S.
5	B.A.C. 6699	6½	2 58 36	19 29 0.28	23 32 56.8	N. 45 13	66 N. 5 N.
5	53 Sagittarii	6	4 35 14	19 33 11.76	23 40 33.4	N. 56 45	66 N. 18 N.
5	B.A.C. 6727	6½	4 41 56	19 33 29.21	23 40 45.1	N. 57 14	66 N. 19 N.
5	B.A.C. 6864	6	12 55 38	19 54 50.34	S. 23 2 23.1	N. 45 24	67 N. 5 N.
5	B.A.C. 6878	6½	13 50 10	19 57 11.44	22 54 15.4	N. 40 51	66 N. 0
5	B.A.C. 6889	6	14 19 59	19 58 28.47	21 37 28.3	S. 33 55	9 S. 79 S.
5	4 Capricor.	6	19 24 6	20 11 32.38	22 9 1.4	N. 20 17	41 N. 20 S.
6	17 Capricor.	6	6 27 33	20 39 46.13	21 54 52.7	N. 68 43	68 N. 35 N.
6	20 Capricor.	6	11 50 13	20 53 20.09	S. 19 27 44.0	S. 41 46	12 S. 90 S.
6	1 Capricor.	5½	13 44 51	20 58 7.49	20 17 26.6	N. 21 54	47 N. 19 S.
6	30 Capricor.	6	19 13 31	21 11 46.22	18 26 43.1	S. 46 12	15 S. 90 S.
7	7 Capricor.	3½	4 15 59	21 33 58.84	17 9 36.2	S. 44 58	12 S. 90 S.
7	8 Capricor.	3	7 8 19	21 40 57.11	16 37 37.3	S. 50 7	16 S. 90 S.
7	29 Aquarii -	6	13 34 16	21 56 24.51	S. 17 29 43.5	N. 65 13	73 N. 27 N.
7	50 Aquarii -	6	22 56 39	22 18 32.72	14 5 16.6	S. 40 2	4 S. 89 S.
8	B.A.C. 7835	6½	1 20 18	22 24 7.57	13 28 44.1	S. 50 2	14 S. 90 S.
8	56 Aquarii -	6	1 26 54	22 24 22.91	15 8 55.2	N. 51 23	75 N. 10 N.
8	74 Aquarii -	6	11 35 7	22 47 40.45	12 12 10.5	S. 8 9	27 N. 47 S.
8	ψ Aquarii -	4½	21 34 15	23 10 6.85	S. 9 41 17.7	S. 37 17	2 N. 83 S.
8	ψ Aquarii -	4½	22 29 54	23 12 10.47	9 47 4.9	S. 19 55	18 N. 59 S.
8	ψ Aquarii -	5	22 58 17	23 13 13.43	10 12 46.9	N. 11 42	47 N. 28 S.
9	B.A.C. 8214	6½	6 31 33	23 29 50.34	8 4 29.3	S. 20 49	18 N. 60 S.
9	B.A.C. 8274	6	12 31 41	23 42 51.76	6 59 34.6	S. 8 12	30 N. 47 S.
9	30 Piscium -	5	18 47 44	23 56 18.35	S. 6 37 35.4	N. 51 45	83 N. 10 N.
9	33 Piscium -	5	20 23 9	23 59 41.56	6 19 28.7	N. 54 33	84 N. 13 N.
9	B.A.C. 17 -	6	22 43 58	0 4 40.47	5 51 39.7	N. 57 39	84 N. 17 N.
10	B.A.C. 81 -	6½	5 27 43	0 18 51.15	2 49 44.7	S. 35 17	6 N. 80 S.
10	14 Ceti - -	6½	10 44 48	0 29 53.13	1 6 42.6	S. 68 17	32 S. 90 S.
10	15 Ceti - -	6½	11 58 30	0 32 26.29	S. 1 6 35.3	S. 52 9	11 S. 90 S.
11	26 Ceti - -	6½	0 27 2	0 58 8.38	N. 0 46 31.2	S. 0 45	38 N. 40 S.
11	29 Ceti - -	6½	2 29 23	1 2 18.37	1 24 57.1	S. 12 30	27 N. 51 S.
11	33 Ceti - -	6	3 45 10	1 4 52.98	1 51 31.4	S. 22 35	18 N. 63 S.
11	35 Ceti - -	6½	4 43 20	1 6 51.48	N. 1 53 18.9	S. 11 45	28 N. 51 S.

428 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Sept. 11	f Piscium -	5½	h m s 7 18 13	h m s 1 12 6.58	N. 3 2 1.1	S. 46 56	6 S. 87 S.
11	γ Piscium -	4½	18 57 31	1 35 41.38	4 55 45.1	S. 11 41	28 N. 50 S.
12	64 Ceti - -	6	9 48 33	2 5 31.35	8 3 9.0	S. 16 32	23 N. 55 S.
12	ξ Ceti - -	4½	10 37 16	2 7 9.01	8 19 43.8	S. 23 25	17 N. 62 S.
12	B.A.C. 741 -	6½	16 20 31	2 18 36.59	9 12 50.1	S. 9 8	30 N. 46 S.
12	ξ Arietis -	5½	16 29 14	2 18 54.07	N. 10 6 37.0	S. 61 14	24 S. 80 S.
12	B.A.C. 755 -	6	17 27 22	2 20 50.48	10 4 7.1	S. 47 30	8 S. 80 S.
12	B.A.C. 830 -	6	1 17 42	2 36 32.49	10 16 13.6	N. 29 21	73 N. 8 S.
13	38 Arietis -	5	2 29 42	2 38 56.74	11 58 51.6	S. 59 59	24 S. 78 S.
13	B.A.C. 987 -	6½	15 37 31	3 5 18.18	12 37 46.8	N. 40 40	90 N. 6 N.
14	B.A.C. 1119	6	5 26 26	3 33 11.24	N. 16 10 35.9	S. 38 12	1 N. 74 S.
14	B.A.C. 1206	6	12 10 0	3 46 50.57	16 59 50.1	S. 27 28	12 N. 61 S.
14	B.A.C. 1240	6	15 53 55	3 54 26.74	17 52 54.9	S. 48 50	12 S. 72 S.
14	B.A.C. 1272	6	19 26 1	4 1 39.94	17 2 40.0	N. 30 23	77 N. 0
15	B.A.C. 1361	6	3 38 42	4 18 30.56	18 47 17.9	S. 11 4	28 N. 40 S.
15	δ Tauri - -	5	3 55 50	4 19 5.80	N. 17 40 31.1	N. 57 48	90 N. 33 N.
15	ε Tauri - -	3½	5 25 9	4 22 9.74	18 56 4.8	S. 6 58	32 N. 35 S.
15	ι Tauri - -	5	21 58 11	4 56 29.23	21 25 51.5	S. 50 31	16 S. 69 S.
15	B.A.C. 1563	5½	23 10 54	4 59 1.14	19 39 10.8	N. 62 56	90 N. 46 N.
16	ι Tauri - -	5½	0 15 22	5 1 15.89	20 16 18.5	N. 31 40	80 N. 7 N.
16	105 Tauri -	6	0 16 45	5 1 18.80	N. 21 33 31.2	S. 45 25	9 S. 68 S.
16	π Tauri - -	6	5 40 51	5 12 37.97	21 58 55.6	S. 43 0	7 S. 68 S.
16	114 Tauri -	6	9 39 18	5 20 59.39	21 50 30.0	S. 15 56	23 N. 40 S.
16	ζ Tauri - -	3½	14 25 1	5 31 2.10	21 4 26.5	N. 50 21	90 N. 30 N.
16	B.A.C. 1801	6	17 3 8	5 36 36.50	23 9 5.6	S. 64 6	40 S. 67 S.
17	141 Tauri -	6	1 43 17	5 55 0.53	N. 22 23 47.4	N. 9 41	50 N. 10 S.
17	1 Geminor.	5	2 50 30	5 57 23.65	23 16 5.8	S. 39 31	3 S. 67 S.
17	2 Geminor.	6½	4 5 40	6 0 3.78	23 38 51.1	S. 58 58	30 S. 66 S.
17	B.A.C. 1970	6½	5 24 27	6 2 51.74	22 12 29.4	N. 30 42	80 N. 11 N.
17	3 Geminor.	6	5 28 49	6 3 1.03	23 7 47.9	S. 24 26	13 N. 46 S.
17	6 Geminor.	6	6 41 42	6 5 36.48	N. 22 55 57.4	S. 9 43	29 N. 29 S.
17	γ Geminor.	3½	7 54 28	6 8 11.81	22 32 16.8	N. 16 41	58 N. 2 S.
17	μ Geminor.	3	11 40 59	6 16 15.90	22 34 9.7	N. 22 15	66 N. 4 N.
18	B.A.C. 2238	6	1 13 1	6 45 17.40	23 43 55.1	S. 33 28	4 N. 55 S.
18	44 Geminor.	6½	7 25 30	6 58 38.47	22 48 8.3	N. 22 4	66 N. 7 N.
18	δ Geminor.	3½	14 19 51	7 13 30.50	N. 22 11 7.2	N. 53 51	90 N. 40 N.
18	58 Geminor.	6	15 51 55	7 16 48.82	23 9 26.9	S. 6 22	32 N. 23 S.
19	84 Geminor.	6½	5 37 36	7 46 26.33	22 37 14.6	S. 2 33	36 N. 22 S.
19	7 Cancri -	6½	10 40 40	7 57 17.91	22 22 54.0	S. 3 49	35 N. 24 S.
19	μ Cancri -	6	11 48 42	7 59 44.03	22 57 3.4	S. 41 52	6 S. 67 S.
19	μ Cancri -	5½	12 30 52	8 1 14.63	N. 21 54 10.3	N. 18 33	61 N. 3 S.
19	B.A.C. 2788	6	18 24 38	8 13 53.66	21 5 52.9	N. 43 57	90 N. 22 N.
20	γ Cancri -	6	0 12 13	8 26 17.84	20 49 0.6	N. 34 44	87 N. 11 N.
20	39 Cancri -	6	3 40 54	8 33 43.75	20 23 53.5	N. 42 30	90 N. 19 N.
20	40 Cancri -	6	3 43 16	8 33 48.79	N. 20 21 44.0	N. 44 27	90 N. 21 N.

ELEMENTS OF OCCULTATIONS, 1889. 429

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Sept. 20	♋ Canceri -	6	h m s 3 51 0	h m s 8 34 5.34	N. 19 56 8.7	N. 69 22	90° N. 61° N.
	20 42 Canceri -	6½	3 58 39	8 34 21.67	20 6 37.5	N. 58 14	90° N. 38° N.
	20 B.A.C. 2925	6½	4 4 47	8 34 34.77	19 58 19.2	N. 66 0	90° N. 52° N.
	20 ♀ Canceri -	4½	5 9 9	8 36 52.12	21 51 59.0	S. 53 19	19° S. 68° S.
	20 80 Canceri -	6½	18 43 10	9 5 42.85	18 29 54.1	N. 67 6	90° N. 50° N.
	20 83 Canceri -	6	22 3 47	9 12 47.36	N. 18 10 28.7	N. 63 35	90° N. 42° N.
	21 ♀ Leonis -	3½	21 10 7	10 1 16.88	17 18 10.7	S. 71 22	48° S. 73° S.
	22 37 Leonis -	6	1 42 23	10 10 43.36	14 16 51.2	N. 67 40	90° N. 43° N.
	22 42 Leonis -	6	4 11 8	10 15 52.25	15 32 3.2	S. 31 22	8° N. 67° S.
	22 B.A.C. 3579	6	7 34 1	10 22 52.78	14 54 34.7	S. 27 11	13° N. 62° S.
	22 ♀ Leonis -	6	9 12 22	10 26 16.37	N. 14 42 21.8	S. 31 25	9° N. 67° S.
	26 94 Virginis -	6	16 37 16	14 0 25.19	S. 8 21 43.8	N. 60 29	82° N. 20° N.
	27 ♀ Libræ -	6	14 30 31	14 48 21.56	11 26 43.7	S. 29 51	8° N. 72° S.
	27 ♀ Libræ -	6	15 34 42	14 50 41.98	10 57 41.5	S. 71 42	40° S. 90° S.
	28 ♀ Libræ -	6	2 13 40	15 14 49.30	15 8 50.6	N. 55 57	75° N. 15° N.
	28 ♀ Libræ -	6	3 6 44	15 16 50.61	S. 14 44 14.2	N. 21 28	55° N. 19° S.
	28 ♀ Libræ -	6	6 24 45	15 24 25.15	16 13 43.4	N. 74 36	74° N. 45° N.
	28 ♀ Libræ -	4½	8 32 17	15 29 19.46	14 25 7.7	S. 56 55	22° S. 90° S.
	28 ♀ Libræ -	6	12 12 24	15 37 50.36	15 19 6.8	S. 41 35	7° S. 90° S.
	28 ♀ Libræ -	4½	16 20 37	15 47 30.97	16 24 10.8	S. 18 37	15° N. 58° S.
	28 49 Libræ -	5½	19 8 27	15 54 6.25	S. 16 12 20.6	S. 57 59	25° S. 90° S.
	28 ♀ Scorpæ -	4	23 57 59	16 5 33.24	19 10 17.8	N. 74 20	71° N. 46° N.
	29 B.A.C. 5408	6½	1 6 9	16 8 15.93	18 14 47.6	N. 8 26	37° N. 31° S.
	29 ♀ Ophiuchi	5	5 0 8	16 17 37.06	19 46 38.4	N. 65 42	70° N. 30° N.
	29 ♀ Ophiuchi	6	6 14 23	16 20 35.99	18 12 13.6	S. 39 20	8° S. 90° S.
	29 B.A.C. 5580	6	12 19 53	16 35 22.68	S. 19 42 42.8	N. 1 30	28° N. 38° S.
	29 B.A.C. 5663	6½	17 1 34	16 46 52.55	20 13 51.7	S. 2 32	24° N. 42° S.
	29 B.A.C. 5700	6½	18 31 10	16 50 33.19	19 21 47.9	S. 65 13	39° S. 90° S.
	29 B.A.C. 5758	6	22 10 26	16 59 35.22	21 24 32.8	N. 32 48	58° N. 8° S.
	30 ♀ Ophiuchi	5	4 6 35	17 14 22.08	20 59 33.8	S. 28 33	3° S. 71° S.
	30 B.A.C. 5866	6	5 35 19	17 18 4.22	S. 21 20 13.0	S. 16 13	8° N. 56° S.
	30 B.A.C. 5954	6	11 10 2	17 32 5.97	21 50 40.3	S. 14 19	8° N. 54° S.
	30 58 Ophiuchi	5	13 1 35	17 36 47.76	21 37 40.7	S. 35 50	11° S. 84° S.
	30 4 Sagittarii	5	19 25 38	17 53 2.08	23 48 17.5	N. 69 20	66° N. 39° N.
	30 B.A.C. 6088	6	20 16 41	17 55 12.01	22 46 39.4	N. 4 47	23° N. 35° S.
Oct.	JUPITER -	-	23 5 29	18 2 22.29	S. 23 30 9.4	N. 39 24	62° N. 1° S.
	1 B.A.C. 6161	6	0 6 29	18 4 58.07	23 43 21.4	N. 49 41	66° N. 10° N.
	1 14 Sagittarii	6	1 8 46	18 7 37.17	21 44 29.5	S. 71 59	59° S. 90° S.
	1 24 Sagittarii	6	8 45 55	18 27 7.87	24 6 49.6	N. 54 48	66° N. 16° N.
	1 B.A.C. 6343	6	10 34 40	18 31 46.93	23 35 55.7	N. 21 31	37° N. 18° S.
	1 26 Sagittarii	6	11 52 36	18 35 6.97	S. 23 56 8.6	N. 40 21	62° N. 0
	1 28 Sagittarii	6	13 39 11	18 39 40.66	22 30 24.3	S. 46 51	28° S. 90° S.
	1 30 Sagittarii	6	15 24 46	18 44 11.81	22 17 14.5	S. 60 59	44° S. 90° S.
	1 ♀ Sagittarii	5	16 41 43	18 47 29.45	22 52 48.7	S. 25 48	8° S. 68° S.
	1 ♀ Sagittarii	5	17 3 42	18 48 25.92	S. 22 48 29.6	S. 30 11	13° S. 74° S.

430 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Oct. 1	B.A.C. 6448	6	h m s	h m s	° ' "	° ' "	° ' "
1	B.A.C. 6485	6½	17 24 30	18 49 19.34	S. 23 18 43.1	0 0	15 N. 39 S.
1	B.A.C. 6524	6½	19 36 6	18 54 57.38	22 50 56.3	S. 27 37	10 S. 71 S.
2	B.A.C. 6576	6	21 41 22	19 0 18.97	22 39 58.6	S. 37 43	19 S. 88 S.
2	B.A.C. 6607	6	1 0 3	19 8 48.84	24 22 5.1	N. 67 9	66 N. 35 N.
2	B.A.C. 6607	6	3 1 30	19 14 0.25	22 36 31.7	S. 35 52	16 S. 84 S.
2	χ ¹ Sagittarii	6	4 53 55	19 18 48.23	S. 24 10 40.8	N. 61 12	66 N. 25 N.
2	50 Sagittarii	6	5 15 38	19 19 43.81	21 59 42.1	S. 69 9	54 S. 90 S.
2	B.A.C. 6699	6½	8 53 4	19 28 59.85	23 32 58.0	N. 31 29	51 N. 9 S.
2	53 Sagittarii	6	10 31 34	19 33 11.33	23 40 34.7	N. 43 6	67 N. 3 N.
2	B.A.C. 6727	6½	10 38 25	19 33 28.79	23 40 46.4	N. 43 36	66 N. 3 N.
2	B.A.C. 6864	6	19 2 23	19 54 49.95	S. 23 2 24.5	N. 32 17	54 N. 8 S.
2	B.A.C. 6878	6½	19 58 10	19 57 11.05	22 54 16.9	N. 27 47	49 N. 13 S.
2	B.A.C. 6889	6	20 28 37	19 58 28.09	21 37 29.7	S. 46 57	22 S. 90 S.
3	4 Capricor.	6	1 39 40	20 11 32.00	22 9 3.0	N. 7 37	29 N. 32 S.
3	B.A.C. 7049	6	6 15 22	20 23 2.45	22 45 26.7	N. 67 37	67 N. 35 N.
3	17 Capricor.	6	12 59 19	20 39 45.82	S. 21 54 54.4	N. 56 56	68 N. 18 N.
3	20 Capricor.	6	18 30 18	20 53 19.81	19 27 45.6	S. 53 4	25 S. 90 S.
3	7 Capricor.	5½	20 27 55	20 58 7.21	20 17 28.3	N. 10 47	35 N. 29 S.
3	27 Capricor.	6	22 34 10	21 3 14.60	20 59 55.6	N. 68 57	69 N. 36 N.
4	30 Capricor.	6	2 5 17	21 11 45.96	18 26 44.7	S. 56 47	27 S. 90 S.
4	7 Capricor.	3½	11 22 21	21 33 58.63	S. 17 9 37.7	S. 54 35	23 S. 90 S.
4	8 Capricor.	3	14 19 21	21 40 56.92	16 37 38.8	S. 59 24	28 S. 90 S.
4	29 Aquarii	6	20 55 38	21 56 24.35	17 29 45.1	N. 56 41	73 N. 17 N.
5	50 Aquarii	6	6 32 56	22 18 32.62	14 5 17.8	S. 47 23	12 S. 90 S.
5	B.A.C. 7835	6½	9 0 18	22 24 7.48	13 28 45.2	S. 57 4	21 S. 90 S.
5	56 Aquarii	6	9 7 4	22 24 22.82	S. 15 8 56.6	N. 44 23	72 N. 3 N.
5	74 Aquarii	6	19 30 30	22 47 40.41	12 12 11.5	S. 13 46	23 N. 53 S.
6	ψ ¹ Aquarii	4½	5 43 32	23 10 6.88	9 41 18.4	S. 41 26	2 S. 90 S.
6	ψ ² Aquarii	4½	6 40 25	23 12 10.50	9 47 5.6	S. 23 56	15 N. 64 S.
6	ψ ³ Aquarii	5	7 9 25	23 13 13.46	10 12 47.6	N. 7 46	44 N. 32 S.
6	B.A.C. 8214	6½	14 52 9	23 29 50.41	S. 8 4 29.7	S. 23 37	16 N. 64 S.
6	B.A.C. 8274	6	20 59 13	23 42 51.87	6 59 34.8	S. 10 5	29 N. 49 S.
7	30 Piscium	5	3 21 50	23 56 18.49	6 37 35.6	N. 50 51	83 N. 9 N.
7	33 Piscium	5	4 58 49	23 59 41.71	6 19 28.8	N. 53 54	84 N. 12 N.
7	B.A.C. 17	6	7 21 50	0 4 40.63	5 51 39.8	N. 57 22	84 N. 16 N.
7	B.A.C. 81	6½	14 11 23	0 18 51.34	S. 2 49 44.3	S. 34 31	7 N. 79 S.
7	14 Ceti	6½	19 32 25	0 29 53.35	1 6 41.9	S. 66 43	29 S. 90 S.
7	15 Ceti	6½	20 46 58	0 32 26.51	S. 1 6 34.5	S. 50 23	8 S. 90 S.
8	26 Ceti	6½	9 22 26	0 58 8.66	N. 0 46 32.2	N. 2 56	42 N. 36 S.
8	29 Ceti	6½	11 25 38	1 2 18.67	1 24 58.2	S. 8 31	31 N. 47 S.
8	33 Ceti	6	12 41 54	1 4 53.28	N. 1 51 32.5	S. 18 25	22 N. 58 S.
8	35 Ceti	6½	13 40 25	1 6 51.79	1 53 20.1	S. 7 27	32 N. 46 S.
8	ψ ¹ Piscium	5½	16 16 9	1 12 6.91	3 2 2.4	S. 42 15	1 S. 83 S.
9	ψ ² Piscium	4½	3 57 47	1 35 41.78	4 55 46.7	S. 5 20	34 N. 44 S.
9	64 Ceti	6	18 48 22	2 5 31.80	N. 8 3 10.9	S. 8 14	31 N. 46 S.

ELEMENTS OF OCCULTATIONS, 1889. 431

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
Oct. 9	♄ Ceti - -	4½	h m s 19 36 58	h m s 2 7 9.47	° ' " N. 8 19 45.7	° ' " S. 15 1	° 25 N. 52 S.
10	B.A.C. 741 -	6½	1 19 5	2 18 37.09	9 12 52.1	S. 0 3	39 N. 37 S.
10	♄ Arietis -	5½	1 27 46	2 18 54.57	10 6 39.2	S. 52 7	12 S. 80 S.
10	B.A.C. 755 -	6	2 25 39	2 20 50.99	10 4 9.3	S. 38 17	2 N. 80 S.
10	B.A.C. 830 -	6	10 13 34	2 36 33.02	10 16 15.5	N. 39 27	90 N. 2 N.
10	38 Arietis -	5	11 25 7	2 38 57.28	N. 11 58 53.8	S. 49 45	10 S. 78 S.
11	B.A.C. 987 -	6½	0 27 12	3 5 18.79	12 37 48.9	N. 52 13	90 N. 19 N.
11	B.A.C. 1119	6	14 8 37	3 33 11.90	16 10 38.0	S. 25 27	14 N. 59 S.
11	B.A.C. 1206	6	20 48 10	3 46 51.25	16 59 52.1	S. 14 13	25 N. 46 S.
12	B.A.C. 1240	6	0 29 50	3 54 27.46	17 52 57.0	S. 35 20	4 N. 70 S.
12	B.A.C. 1272	6	3 59 46	4 1 40.68	N. 17 2 41.9	N. 44 8	90 N. 13 N.
12	B.A.C. 1361	6	12 7 23	4 18 31.30	18 47 19.7	N. 3 10	43 N. 26 S.
12	♄ Tauri - -	3½	13 52 45	4 22 10.49	18 56 6.4	N. 7 22	47 N. 21 S.
13	♄ Tauri - -	5	6 16 12	4 56 30.06	21 25 52.8	S. 35 25	3 N. 65 S.
13	♄ Tauri - -	5½	8 32 10	5 1 16.69	20 16 19.6	N. 46 52	90 N. 23 N.
13	105 Tauri - -	6	8 33 33	5 1 19.61	N. 21 33 32.4	S. 30 13	8 N. 58 S.
13	7 Tauri - -	6	13 54 56	5 12 38.80	21 58 56.6	S. 27 37	11 N. 54 S.
13	114 Tauri - -	6	17 51 31	5 21 0.22	21 50 30.8	S. 0 27	39 N. 23 S.
13	♄ Tauri - -	3½	22 35 10	5 31 2.93	21 4 27.1	N. 65 58	90 N. 54 N.
13	B.A.C. 1774	6½	23 17 23	5 32 32.75	23 15 32.3	S. 62 18	35 S. 67 S.
14	B.A.C. 1801	6	1 12 16	5 36 37.38	N. 23 9 6.2	S. 48 26	13 S. 67 S.
14	141 Tauri - -	6	9 49 27	5 55 1.39	22 23 47.5	N. 25 31	71 N. 6 N.
14	1 Geminor.	5	10 56 19	5 57 24.47	23 16 5.9	S. 23 41	15 N. 45 S.
14	2 Geminor.	6½	12 11 10	6 0 4.65	23 38 51.2	S. 43 6	7 S. 66 S.
14	B.A.C. 1970	6½	13 29 37	6 2 52.60	22 12 29.4	N. 46 35	90 N. 29 N.
14	3 Geminor.	6	13 33 57	6 3 1.89	N. 23 7 47.9	S. 8 33	30 N. 27 S.
14	6 Geminor.	6	14 46 32	6 5 37.35	22 55 57.3	N. 6 11	46 N. 13 S.
14	7 Geminor.	3½	15 59 2	6 8 12.66	22 32 16.6	N. 32 36	84 N. 14 N.
14	μ Geminor.	3	19 44 46	6 16 16.76	22 34 9.5	N. 38 11	90 N. 20 N.
15	B.A.C. 2238	6	9 15 32	6 45 18.28	23 43 54.3	S. 17 29	21 N. 34 S.
15	♄ Geminor.	6	14 5 8	6 55 40.82	N. 24 22 19.8	S. 55 46	25 S. 66 S.
15	44 Geminor.	6½	15 28 10	6 58 39.34	22 48 7.2	N. 38 1	90 N. 23 N.
15	48 Geminor.	6	18 45 32	7 5 43.52	24 18 45.4	S. 54 30	23 S. 66 S.
15	58 Geminor.	6	23 55 38	7 16 49.68	23 9 25.3	N. 9 29	50 N. 7 S.
16	84 Geminor.	6½	13 44 49	7 46 27.16	22 37 12.5	N. 13 2	54 N. 7 S.
16	7 Canceri -	6½	18 49 44	7 57 18.73	N. 22 22 51.7	N. 11 36	52 N. 9 S.
16	μ Canceri -	6	19 58 12	7 59 44.85	22 57 1.0	S. 26 27	12 N. 50 S.
16	μ Canceri -	5½	20 40 40	8 1 15.45	21 54 7.9	N. 33 56	86 N. 12 N.
17	B.A.C. 2788	6	2 37 2	8 13 54.49	21 5 50.3	N. 59 9	90 N. 41 N.
17	7 Canceri -	6	8 27 26	8 26 18.63	20 48 57.9	N. 49 43	90 N. 28 N.
17	39 Canceri -	6	11 57 56	8 33 44.52	N. 20 23 50.6	N. 57 20	90 N. 37 N.
17	40 Canceri -	6	12 0 19	8 33 49.57	20 21 41.1	N. 59 17	90 N. 40 N.
17	7 Canceri -	4½	13 27 0	8 36 52.89	21 51 56.0	S. 38 33	1 S. 69 S.
19	7 Leonis -	3½	5 53 7	10 1 17.50	17 18 6.8	S. 59 11	24 S. 73 S.

132 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Oct. 19	B.A.C. 3579	6	h m s	h m s	° ' "	° ' "	° ° S.
19	Leonis	6	16 23 18	10 22 53.34	N. 14 54 31.0	S. 15 58	24 N. 50 S.
21	Virginis	6	18 2 35	10 26 16.92	14 42 18.0	S. 20 22	20 N. 55 S.
21	Virginis	6	2 35 50	11 32 44.52	8 44 49.4	S. 29 7	12 N. 70 S.
21	Virginis	4½	6 13 57	11 40 9.61	7 9 0.4	N. 21 46	62 N. 18 S.
21	Virginis	4½	13 35 13	11 55 11.38	7 13 56.0	S. 76 4	49 S. 83 S.
21	B.A.C. 4104	6½	18 51 35	12 5 59.58	N. 4 40 14.2	N. 9 32	49 N. 30 S.
21	Virginis	5	23 6 23	12 14 42.96	N. 3 55 48.2	S. 1 40	38 N. 41 S.
26	Scorpii	4	7 6 8	16 5 32.97	S. 19 10 17.2	N. 63 44	71 N. 25 N.
26	B.A.C. 5408	6½	8 12 24	16 8 15.67	18 14 47.1	S. 2 17	28 N. 41 S.
26	Ophiuchi	5	11 59 50	16 17 36.78	19 46 37.8	N. 54 36	70 N. 13 N.
26	Ophiuchi	6	13 12 1	16 20 35.72	S. 18 12 13.2	S. 50 33	18 S. 90 S.
26	B.A.C. 5580	6	19 7 20	16 35 22.37	19 42 42.3	S. 10 16	18 N. 50 S.
26	B.A.C. 5663	6½	23 41 15	16 46 52.21	20 13 51.3	S. 14 43	13 N. 54 S.
27	B.A.C. 5758	6	4 41 47	16 59 34.86	21 24 32.3	N. 20 13	44 N. 21 S.
27	Ophiuchi	5	10 28 34	17 14 21.71	20 59 33.5	S. 41 34	14 S. 90 S.
27	B.A.C. 5866	6	11 55 2	17 18 3.84	S. 21 20 12.6	S. 29 19	3 S. 72 S.
27	B.A.C. 5954	6	17 21 21	17 32 5.58	21 50 40.0	S. 27 47	3 S. 70 S.
27	58 Ophiuchi	5	19 10 12	17 36 47.36	21 37 40.4	S. 49 25	24 S. 90 S.
28	4 Sagittarii	5	1 25 15	17 53 1.64	23 48 17.2	N. 55 24	66 N. 16 N.
28	B.A.C. 6088	6	2 15 9	17 55 11.58	22 46 39.3	S. 9 12	11 N. 49 S.
28	B.A.C. 6161	6	5 59 55	18 4 57.64	S. 23 43 21.3	N. 35 31	56 N. 6 S.
28	JUPITER	—	11 28 55	18 19 16.90	23 28 27.4	N. 7 11	24 N. 33 S.
28	24 Sagittarii	6	14 28 55	18 27 7.42	24 6 49.8	N. 40 16	61 N. 1 N.
28	B.A.C. 6343	6	16 15 39	18 31 46.47	23 35 55.9	N. 6 56	23 N. 33 S.
28	26 Sagittarii	6	17 32 11	18 35 6.51	23 56 8.8	N. 25 43	42 N. 15 S.
28	28 Sagittarii	6	19 16 54	18 39 40.20	S. 22 30 24.7	S. 61 32	44 S. 90 S.
28	30 Sagittarii	6	21 0 42	18 44 11.35	22 17 14.9	S. 75 43	68 S. 90 S.
28	1 Sagittarii	5	22 16 23	18 47 28.99	22 52 49.1	S. 40 35	22 S. 90 S.
28	1 Sagittarii	5	22 38 2	18 48 25.46	22 48 30.0	S. 44 58	26 S. 90 S.
28	B.A.C. 6448	6	22 58 28	18 49 18.88	23 18 43.5	S. 14 48	2 N. 55 S.
29	B.A.C. 6485	6½	1 8 4	18 54 56.90	S. 22 50 56.8	S. 42 28	24 S. 90 S.
29	B.A.C. 6524	6½	3 11 28	19 0 18.48	22 39 59.1	S. 52 37	34 S. 90 S.
29	B.A.C. 6576	6	6 27 26	19 8 48.36	24 22 5.7	N. 52 11	66 N. 13 N.
29	B.A.C. 6607	6	8 27 23	19 13 59.79	22 36 32.3	S. 50 53	30 S. 90 S.
29	1 Sagittarii	6½	10 15 8	19 18 39.15	24 37 47.9	N. 73 10	65 N. 48 N.
29	1 Sagittarii	6	10 18 27	19 18 47.75	S. 24 10 41.6	N. 46 9	66 N. 6 N.
29	B.A.C. 6699	6½	14 15 0	19 28 59.37	23 32 58.9	N. 16 24	34 N. 24 S.
29	53 Sagittarii	6	15 52 34	19 33 10.86	23 40 35.6	N. 28 0	47 N. 13 S.
29	B.A.C. 6727	6½	15 59 21	19 33 28.32	23 40 47.3	N. 28 29	47 N. 12 S.
30	B.A.C. 6864	6	0 19 30	19 54 49.46	23 2 25.7	N. 17 8	36 N. 23 S.
30	B.A.C. 6878	6½	1 14 56	19 57 10.56	S. 22 54 18.1	N. 12 39	33 N. 27 S.
30	B.A.C. 6889	6	1 45 14	19 58 27.61	21 37 30.9	S. 62 5	41 S. 90 S.
30	4 Capricor.	6	6 55 0	20 11 31.54	22 9 4.4	S. 730	15 N. 47 S.
30	B.A.C. 7049	6	11 30 6	20 23 1.99	22 45 28.1	N. 52 34	67 N. 13 N.
30	17 Capricor.	6	18 14 8	20 39 45.37	S. 21 54 56.1	N. 42 1	69 N. 1 N.

ELEMENTS OF OCCULTATIONS, 1889. 433

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of C and *.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of C and *.	Apparent Declination of *.	Diff. of Apparent Dec. of C and *.	
Oct. 30	20 Capricor.	6	h m s 23 46 0	h m s 20 53 19.38	° ' " S. 19 27 47.3	° ' " S. 67 51	° ' " 43 S. 90 S.
31	1 Capricor.	5½	1 44 6	20 58 6.77	20 17 30.1	S. 3 57	23 N. 43 S.
31	27 Capricor.	6	3 50 59	21 3 14.16	20 59 57.5	N. 54 17	69 N. 15 N.
31	30 Capricor.	6	7 23 25	21 11 45.55	18 26 46.5	S. 71 19	49 S. 90 S.
31	7 Capricor.	3½	16 45 15	21 33 58.26	17 9 39.6	S. 68 42	42 S. 90 S.
31	κ Capricor.	5	17 49 43	21 36 29.33	S. 19 22 11.1	N. 73 34	71 N. 45 N.
31	δ Capricor.	3	19 44 9	21 40 56.56	16 37 40.7	S. 73 22	50 S. 90 S.
Nov. 1	29 Aquarii -	6	2 25 21	21 56 24.00	17 29 47.3	N. 43 7	72 N. 2 N.
1	50 Aquarii -	6	12 11 11	22 18 32.31	14 5 19.8	S. 60 18	25 S. 90 S.
1	B.A.C. 7835	6½	14 41 0	22 24 7.18	13 28 47.2	S. 69 47	40 S. 90 S.
1	56 Aquarii -	6	14 47 54	22 24 22.53	S. 15 8 58.7	N. 31 40	66 N. 10 S.
1	τ Aquarii -	4	23 34 41	22 43 44.91	14 10 27.6	N. 71 49	76 N. 39 N.
1	74 Aquarii -	6	1 22 33	22 47 40.15	12 12 13.5	S. 25 36	12 N. 67 S.
2	ψ Aquarii -	4½	11 47 51	23 10 6.67	9 41 20.1	S. 52 16	14 S. 90 S.
2	ψ Aquarii -	4½	12 45 56	23 12 10.30	9 47 7.3	S. 34 40	5 N. 80 S.
2	ψ Aquarii -	5	13 15 32	23 13 13.27	S. 10 12 49.4	S. 2 56	33 N. 42 S.
2	B.A.C. 8214	6½	21 8 10	23 29 50.25	8 4 31.3	S. 33 28	7 N. 78 S.
3	B.A.C. 8274	6	3 23 14	23 42 51.73	6 59 36.4	S. 19 14	20 N. 59 S.
3	30 Piscium -	5	9 54 17	23 56 18.39	6 37 37.1	N. 42 28	82 N. 0
3	33 Piscium -	5	11 33 24	23 59 41.61	6 19 30.3	N. 45 43	84 N. 4 N.
3	B.A.C. 17 -	6	13 59 34	0 4 40.55	S. 5 51 41.2	N. 49 30	84 N. 8 N.
3	B.A.C. 81 -	6½	20 58 3	0 18 51.29	2 49 45.3	S. 41 31	0 90 S.
4	14 Ceti - -	6½	2 26 0	0 29 53.32	1 6 42.7	S. 73 0	41 S. 90 S.
4	15 Ceti - -	6½	3 42 7	0 32 26.50	S. 1 6 35.4	S. 56 30	16 S. 90 S.
4	26 Ceti - -	6½	16 32 56	0 58 8.71	N. 0 46 31.6	S. 1 28	38 N. 41 S.
4	29 Ceti - -	6½	18 38 30	1 2 18.73	N. 1 24 57.7	S. 12 37	28 N. 52 S.
4	33 Ceti - -	6	19 56 13	1 4 53.35	1 51 32.1	S. 22 21	19 N. 63 S.
4	35 Ceti - -	6½	20 55 49	1 6 51.86	1 53 19.7	S. 11 14	29 N. 51 S.
4	f Piscium -	5½	23 34 26	1 12 6.99	3 2 2.1	S. 45 41	4 S. 87 S.
5	π Piscium -	4½	11 27 59	1 35 41.92	4 55 46.6	S. 7 8	33 N. 46 S.
6	64 Ceti - -	6	2 31 4	2 5 32.04	N. 8 3 11.3	S. 7 58	32 N. 46 S.
6	f Ceti - -	4½	3 20 15	2 7 9.71	8 19 46.1	S. 14 38	25 N. 52 S.
6	B.A.C. 741 -	6½	9 6 13	2 18 37.36	9 12 52.5	N. 1 6	41 N. 36 S.
6	ε Arietis -	5½	9 15 0	2 18 54.84	10 6 39.8	S. 50 58	11 S. 80 S.
6	B.A.C. 755 -	6	10 13 29	2 20 51.26	10 4 9.9	S. 36 59	4 N. 78 S.
6	B.A.C. 830 -	6	18 5 44	2 36 33.32	N. 10 16 16.0	N. 41 46	90 N. 4 N.
6	38 Arietis -	5	19 17 52	2 38 57.60	11 58 54.6	S. 47 17	7 S. 78 S.
7	B.A.C. 987 -	6½	8 24 55	3 5 19.18	12 37 49.6	N. 56 19	90 N. 23 N.
7	B.A.C. 1119	6	22 8 52	3 33 12.36	16 10 39.0	S. 19 47	20 N. 53 S.
8	B.A.C. 1206	6	4 48 47	3 46 51.77	16 59 53.1	S. 7 50	32 N. 39 S.
8	B.A.C. 1240	6	8 30 24	3 54 27.98	N. 17 52 58.0	S. 28 34	11 N. 62 S.
8	B.A.C. 1272	6	12 0 10	4 1 41.21	17 2 42.7	N. 51 15	90 N. 22 N.
8	B.A.C. 1361	6	20 6 55	4 18 31.89	18 47 20.5	N. 11 5	51 N. 18 S.
8	α Tauri - -	3½	21 52 0	4 22 11.08	18 56 7.2	N. 15 26	57 N. 13 S.
9	α Tauri - -	5	14 11 57	4 56 30.74	N. 21 25 53.4	S. 25 57	13 N. 52 S.

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Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of C and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of C and #.	Apparent Declination of #.	Diff. of Apparent Dec. of C and #.	
			h m s	h m s	N. 0' 1"	N. 0' 1"	0' 0"
Nov. 9	1 Tauri - -	5½	16 27 20	5 1 17 37	N. 20 16 20 1	N. 56 30	90 N. 35 N.
9	105 Tauri - -	6	16 28 42	5 1 20 30	21 33 33 0	S. 20 35	18 N. 47 S.
9	n Tauri - -	6	21 48 37	5 12 39 51	21 58 57 1	S. 17 34	21 N. 42 S.
10	114 Tauri - -	6	1 44 4	5 21 0 98	21 50 31 1	N. 9 53	50 N. 13 S.
10	B.A.C. 1774	6½	7 8 21	5 32 33 53	23 15 32 6	S. 51 36	17 S. 67 S.
10	B.A.C. 1801	6	9 2 40	5 36 38 14	N. 23 9 6 4	S. 37 36	0 65 S.
10	141 Tauri - -	6	17 37 27	5 55 2 18	22 23 47 3	N. 36 53	90 N. 17 N.
10	1 Geminor.	5	18 44 0	5 57 25 23	23 16 5 7	S. 12 15	27 N. 32 S.
10	2 Geminor.	6½	19 58 32	6 0 5 45	23 38 51 0	S. 31 36	6 N. 56 S.
10	B.A.C. 1970	6½	21 16 39	6 2 53 40	22 12 29 0	N. 58 10	90 N. 44 N.
10	3 Geminor.	6	21 20 58	6 3 2 70	N. 23 7 47 6	N. 3 2	43 N. 16 S.
10	6 Geminor.	6	22 33 15	6 5 38 16	22 55 56 9	N. 17 50	60 N. 1 S.
10	7 Geminor.	3½	23 45 26	6 8 13 46	22 32 16 1	N. 44 19	90 N. 26 N.
11	μ Geminor.	3	3 30 19	6 16 17 60	22 34 8 8	N. 50 6	90 N. 34 N.
11	B.A.C. 2154	6½	10 11 46	6 30 42 44	24 40 48 2	S. 66 43	48 S. 65 S.
11	B.A.C. 2238	6	16 58 40	6 45 19 14	N. 23 43 53 1	S. 4 55	34 N. 20 S.
11	μ Geminor.	6	21 47 48	6 55 41 70	24 22 18 5	S. 43 0	7 S. 66 S.
11	44 Geminor.	6½	23 10 44	6 58 40 21	22 48 5 8	N. 50 51	90 N. 38 N.
12	48 Geminor.	6	2 27 58	7 5 44 44	24 18 43 8	S. 41 32	5 S. 66 S.
12	58 Geminor.	6	7 38 4	7 16 50 60	23 9 23 5	N. 22 38	67 N. 6 N.
12	84 Geminor.	6½	21 28 54	7 46 28 06	N. 22 37 10 1	N. 26 36	73 N. 6 N.
13	7 Cancrī -	6½	2 35 4	7 57 19 66	22 22 48 9	N. 25 19	71 N. 5 N.
13	μ Cancrī -	6	3 43 52	7 59 45 79	22 56 58 2	S. 12 45	26 N. 34 S.
13	μ Cancrī -	5½	4 26 33	8 1 16 39	21 54 5 1	N. 47 40	90 N. 28 N.
13	7 Cancrī -	6	16 17 59	8 26 19 51	20 48 54 6	N. 63 38	90 N. 49 N.
13	7 Cancrī -	4½	21 20 10	8 36 53 78	N. 21 51 52 6	S. 24 35	14 N. 51 S.
15	7 Leonis -	3½	14 20 28	10 1 18 33	17 18 2 1	S. 45 32	7 S. 73 S.
15	42 Leonis -	6	21 33 48	10 15 53 62	15 31 54 6	S. 6 23	33 N. 39 S.
16	B.A.C. 3579	6	1 2 41	10 22 54 16	14 54 25 9	S. 2 38	37 N. 36 S.
16	8 Leonis -	6	2 43 57	10 26 17 73	14 42 12 9	S. 7 6	32 N. 41 S.
17	1 Leonis -	4	4 39 20	11 18 9 28	N. 11 8 16 4	S. 74 20	49 S. 79 S.
17	μ Virginis -	6	11 57 55	11 32 45 19	8 44 44 5	S. 17 41	23 N. 55 S.
17	ε Virginis -	4½	15 22 47	11 39 34 79	8 52 22 2	S. 66 53	31 S. 81 S.
17	7 Virginis -	4½	15 40 31	11 40 10 26	7 8 55 6	N. 32 56	78 N. 7 S.
17	μ Virginis -	4½	23 10 36	11 55 12 00	7 13 51 1	S. 65 30	28 S. 83 S.
18	11 Virginis -	6	3 45 41	12 4 24 88	N. 6 25 19 6	S. 75 24	47 S. 84 S.
18	B.A.C. 4104	6½	4 33 2	12 6 0 21	4 40 9 4	N. 19 38	60 N. 21 S.
18	c Virginis -	5	8 52 29	12 14 43 57	3 55 43 6	N. 8 1	47 N. 32 S.
18	B.A.C. 4254	6	17 44 46	12 32 43 66	N. 2 27 46 8	S. 21 5	20 N. 61 S.
19	80 Virginis -	6	21 11 42	13 29 45 35	S. 4 59 52 8	N. 43 19	83 N. 0
20	B.A.C. 4572	6	1 7 13	13 38 7 84	S. 4 56 28 2	S. 3 55	36 N. 43 S.
20	94 Virginis -	6	11 25 2	14 0 25 59	8 21 47 1	N. 61 0	82 N. 19 N.
24	B.A.C. 6161	6	14 19 31	18 4 57 45	23 43 21 0	N. 27 53	47 N. 13 S.
24	24 Sagittarii	6	22 30 50	18 27 7 19	24 6 49 5	N. 31 59	49 N. 10 S.
25	B.A.C. 6343	6	0 13 50	18 31 46 23	S. 23 35 55 7	S. 1 29	15 N. 41 S.

ELEMENTS OF OCCULTATIONS, 1889. 435

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Nov.	25 26 Sagittarii	6	h m s 1 27 40	h m s 18 35 6.26	S. 23 56 8.7	N. 17 13	33 N. 23 S.
	25 28 Sagittarii	6	3 8 44	18 39 39.95	22 30 24.7	S. 70 10	54 S. 90 S.
	25 JUPITER -	-	4 6 45	18 42 17.05	23 14 0.5	S. 27 18	8 S. 70 S.
	25 * Sagittarii	5	6 1 55	18 47 28.72	22 52 49.1	S. 49 25	30 S. 90 S.
	25 * Sagittarii	5	6 22 48	18 48 25.19	22 48 30.1	S. 53 50	35 S. 90 S.
	25 B.A.C. 6448	6	6 42 33	18 49 18.60	S. 23 18 43.5	S. 23 41	6 S. 65 S.
	25 B.A.C. 6485	6½	8 47 35	18 54 56.63	22 50 56.9	S. 51 30	32 S. 90 S.
	25 B.A.C. 6524	6½	10 46 42	19 0 18.21	22 39 59.3	S. 61 47	44 S. 90 S.
	25 B.A.C. 6576	6	13 55 49	19 8 48.07	24 22 5.7	N. 42 49	64 N. 1 N.
	25 B.A.C. 6607	6	15 51 36	19 13 59.49	22 36 32.6	S. 60 22	40 S. 90 S.
	25 x' Sagittarii	6	17 33 6	19 18 32.05	S. 24 43 22.1	N. 69 4	65 N. 35 N.
	25 x' Sagittarii	6½	17 35 38	19 18 38.84	24 37 48.0	N. 63 34	65 N. 26 N.
	25 x' Sagittarii	6	17 38 50	19 18 47.45	24 10 41.7	N. 36 34	55 N. 5 S.
	25 B.A.C. 6699	6½	21 27 19	19 28 59.05	23 32 59.2	N. 6 35	24 N. 33 S.
	25 53 Sagittarii	6	23 1 33	19 33 10.53	23 40 35.9	N. 18 6	35 N. 23 S.
	25 B.A.C. 6727	6½	23 8 6	19 33 27.99	S. 23 40 47.6	N. 18 34	37 N. 22 S.
	26 B.A.C. 6864	6	7 11 44	19 54 49.12	23 2 26.3	N. 6 49	27 N. 33 S.
	26 B.A.C. 6878	6½	8 5 23	19 57 10.22	22 54 18.7	N. 2 17	23 N. 37 S.
	26 B.A.C. 6889	6	8 34 43	19 58 27.27	21 37 31.6	S. 72 29	55 S. 90 S.
	26 4 Capricor.	6	13 34 43	20 11 31.19	22 9 5.1	S. 18 7	6 N. 58 S.
	26 B.A.C. 7049	6	18 1 27	20 23 1.62	S. 22 45 29.0	N. 41 46	67 N. 0
	27 17 Capricor.	6	0 33 52	20 39 44.98	21 54 57.1	N. 30 59	56 N. 11 S.
	27 7 Capricor.	5½	7 51 50	20 58 6.40	20 17 31.3	S. 15 11	12 N. 55 S.
	27 27 Capricor.	6	9 55 31	21 3 13.78	20 59 58.8	N. 43 0	69 N. 1 N.
	27 9 Capricor.	5½	12 23 55	21 9 20.32	21 6 36.8	N. 69 12	69 N. 35 N.
	27 8 Capricor.	4½	21 15 24	21 30 53.23	S. 19 57 40.7	N. 76 7	70 N. 51 N.
	27 8 Capricor.	5	23 35 34	21 36 28.94	19 22 12.7	N. 62 4	71 N. 23 N.
	28 29 Aquarii -	6	8 1 56	21 56 23.63	17 29 49.1	N. 31 35	63 N. 11 S.
	28 50 Aquarii -	6	17 39 28	22 18 31.96	14 5 21.7	S. 71 47	43 S. 90 S.
	28 56 Aquarii -	6	20 14 20	22 24 22.17	15 9 0.7	N. 20 13	52 N. 21 S.
	29 58 Aquarii -	6	4 4 40	22 41 50.87	S. 14 38 19.6	N. 78 23	75 N. 58 N.
	29 7 Aquarii -	4	4 56 15	22 43 44.56	14 10 29.8	N. 60 32	76 N. 20 N.
	29 74 Aquarii -	6	6 43 21	22 47 39.82	12 12 15.5	S. 36 51	1 N. 83 S.
	29 ψ Aquarii -	4½	17 5 48	23 10 6.36	9 41 22.2	S. 63 14	27 S. 90 S.
	29 ψ Aquarii -	4½	18 3 44	23 12 9.99	9 47 9.4	S. 45 36	6 S. 90 S.
	29 ψ Aquarii -	5	18 33 19	23 13 12.96	S. 10 12 51.6	S. 13 50	24 N. 53 S.
	30 B.A.C. 8214	6½	2 25 45	23 29 49.96	8 4 33.5	S. 44 4	4 S. 90 S.
	30 B.A.C. 8274	6	8 41 41	23 42 51.46	6 59 38.5	S. 29 32	10 N. 72 S.
	30 30 Piscium -	5	15 14 27	23 56 18.14	6 37 39.2	N. 32 30	74 N. 10 S.
	30 33 Piscium -	5	16 54 9	23 59 41.37	6 19 32.4	N. 35 50	79 N. 6 S.
Dec.	30 B.A.C. 17 -	6	19 21 16	0 4 40.32	S. 5 51 43.3	N. 39 45	85 N. 2 S.
	1 B.A.C. 81 -	6½	2 23 2	0 18 51.08	2 49 47.2	S. 50 50	9 S. 90 S.
	1 15 Ceti - -	6½	9 10 59	0 32 26.31	1 6 37.1	S. 65 22	28 S. 90 S.
	1 20 Ceti - -	5½	16 43 1	0 47 22.35	S. 1 44 37.2	N. 70 47	88 N. 37 N.

436 ELEMENTS OF OCCULTATIONS, 1889.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R.A. of ☾ and ☿.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of ☾ and ☿.	Apparent Declination of ☿.	Diff. of Apparent Dec. of ☾ and ☿.	
Dec.	29 Ceti - - -	6½	h m s 0 18 10	h m s 1 2 18.60	N. 1 24 56.1	S. 20 24	20 N. 61 S.
	33 Ceti - - -	6	1 36 55	1 4 53.22	1 51 30.6	S. 30 2	11 N. 73 S.
	35 Ceti - - -	6½	2 37 21	1 6 51.74	1 53 18.1	S. 18 51	22 N. 59 S.
	♏ Piscium -	5½	5 18 9	1 12 6.88	3 2 0.7	S. 53 5	12 S. 87 S.
	♏ Piscium -	4½	17 22 12	1 35 41.86	4 55 45.5	S. 13 33	27 N. 53 S.
	64 Ceti - - -	6	8 39 10	2 5 32.05	N. 8 3 10.5	S. 13 6	27 N. 51 S.
	♏ Ceti - - -	4½	9 29 6	2 7 9.72	8 19 45.4	S. 19 42	21 N. 58 S.
	B.A.C. 741 -	6½	15 20 21	2 18 37.40	9 12 51.9	S. 3 27	36 N. 40 S.
	♏ Arietis -	5½	15 29 16	2 18 54.88	10 6 39.3	S. 55 30	17 S. 80 S.
	B.A.C. 755 -	6	16 28 38	2 20 51.31	10 4 9.4	S. 41 27	1 S. 78 S.
	B.A.C. 830 -	6	0 27 52	2 36 33.41	N. 10 16 15.5	N. 38 1	89 N. 0
	38 Arietis -	5	1 41 3	2 38 57.70	11 58 54.3	S. 50 57	12 S. 78 S.
	B.A.C. 987 -	6½	14 58 48	3 5 19.34	12 37 49.3	N. 53 48	90 N. 21 N.
	B.A.C. 1119 -	6	4 52 25	3 33 12.61	16 10 39.2	S. 21 8	19 N. 55 S.
	B.A.C. 1206 -	6	11 36 18	3 46 52.04	16 59 53.4	S. 8 38	31 N. 40 S.
	B.A.C. 1240 -	6	15 19 57	3 54 28.28	N. 17 52 58.3	S. 29 3	10 N. 63 S.
	B.A.C. 1272 -	6	18 51 29	4 1 41.53	17 2 42.8	N. 51 2	90 N. 22 N.
	B.A.C. 1361 -	6	3 1 47	4 18 32.27	18 47 20.8	N. 11 29	52 N. 17 S.
	♉ Tauri - -	3½	4 47 33	4 22 11.47	18 56 7.5	N. 15 58	57 N. 13 S.
	♉ Tauri - -	5	21 12 4	4 56 31.21	21 25 53.8	S. 24 15	15 N. 51 S.
	♏ Tauri - -	5½	23 27 50	5 1 17.86	N. 20 16 20.2	N. 58 23	90 N. 38 N.
	105 Tauri - -	6	23 29 14	5 1 20.79	21 33 33.3	S. 18 43	20 N. 45 S.
	♏ Tauri - -	6	4 49 55	5 12 40.04	21 58 57.3	S. 15 21	24 N. 40 S.
	114 Tauri - -	6	8 45 44	5 21 1.51	21 50 31.2	N. 12 22	53 N. 11 S.
	B.A.C. 1774 -	6½	14 10 20	5 32 34.10	23 15 32.8	S. 48 47	14 S. 67 S.
	B.A.C. 1801 -	6	16 4 42	5 36 38.72	N. 23 9 6.5	S. 34 40	3 N. 61 S.
	141 Tauri - -	6	0 39 22	5 55 2.82	22 23 47.0	N. 40 19	90 N. 20 N.
	♊ Geminor. -	5	1 45 53	5 57 25.86	23 16 5.6	S. 8 44	30 N. 28 S.
	♊ Geminor. -	6½	3 0 22	6 0 6.12	23 38 50.8	S. 28 1	10 N. 51 S.
	B.A.C. 1970 -	6½	4 18 24	6 2 54.06	22 12 28.7	N. 61 49	90 N. 49 N.
	♊ Geminor. -	6	4 22 43	6 3 3.37	N. 23 7 47.3	N. 6 41	47 N. 12 S.
	♊ Geminor. -	6	5 34 54	6 5 38.83	22 55 56.6	N. 21 33	65 N. 2 N.
	♊ Geminor. -	3½	6 47 1	6 8 14.14	22 32 15.7	N. 48 6	90 N. 30 N.
	♊ Geminor. -	3	10 31 34	6 16 18.27	22 34 8.2	N. 54 6	90 N. 39 N.
	B.A.C. 2154 -	6½	17 12 20	6 30 43.15	24 40 47.7	S. 62 23	37 S. 65 S.
	B.A.C. 2238 -	6	23 58 24	6 45 19.88	N. 23 43 52.3	S. 0 15	39 N. 16 S.
	♊ Geminor. -	6	4 46 57	6 55 42.49	24 22 17.5	S. 38 6	1 S. 63 S.
	44 Geminor. -	6½	6 9 43	6 58 40.99	22 48 4.5	N. 55 49	90 N. 44 N.
	48 Geminor. -	6	9 26 32	7 5 45.22	24 18 42.7	S. 36 26	1 N. 62 S.
	58 Geminor. -	6	14 36 3	7 16 51.39	23 9 22.0	N. 27 58	75 N. 11 N.
	B.A.C. 2514 -	6½	21 54 38	7 32 32.73	N. 24 28 10.2	S. 62 53	38 S. 66 S.
	84 Geminor. -	6½	4 25 48	7 46 28.93	22 37 7.9	N. 32 29	84 N. 13 N.
	♋ Canceri -	6½	9 31 52	7 57 20.51	22 12 46.6	N. 31 23	81 N. 10 N.
	♋ Canceri -	6	10 40 40	7 59 46.64	22 56 55.9	S. 6 38	32 N. 28 S.
	♋ Canceri -	5½	11 23 20	8 1 17.23	N. 21 54 2.7	N. 53 48	90 N. 36 N.

ELEMENTS OF OCCULTATIONS, 1889. 437

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of (and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R. A. of (and #.	Apparent Declination of #.	Diff. of Apparent Dec. of (and #.	
Dec. 11	γ Cancri -	4½	h m s 4 18 36	h m s 8 36 54.71	° ' " N. 21 51 49.4	° ' " S. 17 55	21 N. 43 S.
12	η Leonis -	3½	21 39 16	10 1 19.25	17 17 57.3	S. 38 6	1 N. 73 S.
13	42 Leonis -	6	4 59 10	10 15 54.57	15 31 49.4	N. 1 7	41 N. 32 S.
13	B.A.C. 3579 -	6	8 31 31	10 22 55.07	14 54 20.8	N. 4 52	45 N. 28 S.
13	ι Leonis -	6	10 14 33	10 26 18.64	14 42 7.8	N. 0 25	40 N. 33 S.
14	ι Leonis -	4	12 43 14	11 18 10.16	N. 11 8 10.7	S. 66 56	34 S. 79 S.
14	ν Virginis -	6	20 13 7	11 32 46.06	8 44 38.7	S. 10 24	30 N. 48 S.
14	ξ Virginis -	4½	23 43 31	11 39 35.65	8 52 16.4	S. 59 40	22 S. 81 S.
15	ν Virginis -	4½	0 1 45	11 40 11.15	7 8 49.6	N. 40 8	90 N. 0
15	A ⁺ Virginis -	6	1 5 8	11 42 14.58	8 51 29.3	S. 75 12	52 S. 81 S.
15	α Virginis -	4½	7 44 26	11 55 12.88	N. 7 13 45.1	S. 58 27	19 S. 83 S.
15	11 Virginis -	6	12 27 29	12 4 25.72	6 25 13.8	S. 68 28	34 S. 84 S.
15	B.A.C. 4104 -	6½	13 16 13	12 6 1.04	4 40 3.7	N. 26 32	69 N. 14 S.
15	c Virginis -	5	17 43 23	12 14 44.40	3 55 37.8	N. 14 48	55 N. 25 S.
16	B.A.C. 4254 -	6	2 51 52	12 32 44.50	N. 2 27 40.9	S. 14 35	26 N. 54 S.
17	80 Virginis -	6	7 8 52	13 29 46.12	S. 4 49 57.8	N. 48 38	85 N. 6 N.
17	B.A.C. 4572 -	6	11 11 11	13 38 8.57	4 56 33.0	N. 1 13	40 N. 38 S.
17	94 Virginis -	6	21 46 1	14 0 26.28	8 21 51.4	N. 65 35	82 N. 26 N.
18	ξ Libræ -	6	19 35 36	14 48 22.35	11 26 49.2	S. 31 56	7 N. 74 S.
18	ξ Libræ -	6	20 38 50	14 50 45.75	10 57 47.3	S. 74 8	40 S. 90 S.
19	α Libræ -	6	7 4 51	15 14 49.95	S. 15 8 54.2	N. 50 8	75 N. 7 N.
19	α Libræ -	6	7 56 32	15 16 51.24	14 44 18.0	N. 15 23	48 N. 26 S.
19	ζ Libræ -	6	11 9 0	15 24 25.73	16 13 46.3	N. 67 31	74 N. 28 N.
19	ζ Libræ -	6	12 5 29	15 26 39.98	16 28 37.1	N. 71 33	74 N. 35 N.
19	γ Libræ -	4½	13 12 36	15 29 20.00	14 25 11.5	S. 64 38	30 S. 90 S.
19	η Libræ -	6	16 45 19	15 37 50.83	S. 15 19 10.0	S. 50 23	14 S. 90 S.
19	θ Libræ -	4½	20 44 20	15 47 31.37	16 24 13.4	S. 28 37	6 N. 70 S.
19	49 Libræ -	5½	23 25 23	15 54 6.60	16 12 23.3	S. 68 47	37 S. 90 S.
24	B.A.C. 7049 -	6	3 22 52	20 23 1.48	22 45 29.0	N. 38 52	63 N. 3 S.
24	17 Capricor. -	6	9 40 51	20 39 44.82	21 54 57.3	N. 27 55	52 N. 14 S.
24	η Capricor. -	5½	16 42 25	20 58 6.19	S. 20 17 31.9	S. 18 24	9 N. 58 S.
24	χ Capricor. -	6	18 18 1	21 2 13.19	21 38 16.1	N. 74 53	68 N. 44 N.
24	27 Capricor. -	6	18 41 27	21 3 13.57	20 59 59.2	N. 39 44	67 N. 3 S.
24	φ Capricor. -	5½	21 4 13	21 9 20.10	21 6 37.3	N. 65 52	69 N. 27 N.
25	α Capricor. -	4½	5 35 39	21 30 52.98	19 57 41.5	N. 72 38	70 N. 38 N.
25	κ Capricor. -	5	7 50 32	21 36 28.69	S. 19 22 13.6	N. 58 34	71 N. 17 N.
25	29 Aquarii -	6	15 58 7	21 56 23.36	17 29 50.2	N. 27 58	58 N. 14 S.
26	50 Aquarii -	6	1 14 52	22 18 31.67	14 5 23.2	S. 75 29	48 S. 90 S.
26	56 Aquarii -	6	3 44 20	22 24 21.87	15 9 2.1	N. 16 29	49 N. 25 S.
26	58 Aquarii -	6	11 18 45	22 41 50.57	14 38 21.1	N. 74 36	75 N. 41 N.
26	τ Aquarii -	4	12 8 38	22 43 44.26	S. 14 10 31.3	N. 56 45	76 N. 14 N.
26	74 Aquarii -	6	13 52 17	22 47 39.53	12 12 17.2	S. 40 37	2 S. 90 S.
26	ψ Aquarii -	4½	23 55 33	23 10 6.06	9 41 24.0	S. 66 59	31 S. 90 S.
27	ψ Aquarii -	4½	0 51 48	23 12 9.68	9 47 11.3	S. 49 21	9 S. 90 S.

Month and Day.	Star's Name.	Magnitude.	Greenwich Mean Time of Con- junction in R. A. of C and #.	At Conjunction in R.A.			Limits of Latitude.
				Apparent R.A. of C and #.	Apparent Declination of #.	Diff. of Apparent Dec. of C and #.	
Dec. 27	B.A.C. 8214	6½	h m s 8 59 52	h m s 23 29 49·65	S. 8 4 35·4	S. 47 48	7 S. 90 S.
27	B.A.C. 8274	6	15 6 16	23 42 51·16	6 59 40·4	S. 33 13	8 N. 77 S.
27	30 Piscium -	5	21 30 2	23 56 17·85	6 37 41·2	N. 28 53	69 N. 13 S.
27	33 Piscium -	5	23 7 34	23 59 41·08	6 19 34·5	N. 32 14	74 N. 10 S.
28	B.A.C. 17 -	6	1 31 38	0 44 0·01	5 51 45·4	N. 36 11	80 N. 6 S.
28	B.A.C. 81 -	6½	8 25 22	0 18 50·79	S. 2 49 49·2	S. 54 19	13 S. 90 S.
28	15 Ceti - -	6½	15 6 38	0 32 26·03	1 6 39·0	S. 68 45	32 S. 90 S.
28	20 Ceti - -	5½	22 32 28	0 47 22·08	S. 1 44 39·3	N. 67 31	88 N. 30 N.
29	26 Ceti - -	6½	3 56 41	0 58 8·31	N. 0 46 28·1	S. 12 34	28 N. 52 S.
29	29 Ceti - -	6½	6 2 39	1 2 18·34	1 24 54·2	S. 23 32	18 N. 64 S.
29	33 Ceti - -	6	7 20 42	1 4 52·97	N. 1 51 28·7	S. 33 8	9 N. 78 S.
29	35 Ceti - -	6	8 20 35	1 6 51·49	1 53 16·3	S. 21 55	19 N. 62 S.
29	f Piscium -	5½	11 0 4	1 12 6·64	3 1 59·0	S. 56 7	16 S. 87 S.
29	ν Piscium -	4½	23 0 1	1 35 41·65	4 55 43·9	S. 16 20	24 N. 56 S.
30	64 Ceti - -	6	14 15 42	2 5 31·87	8 3 9·2	S. 15 33	25 N. 53 S.
30	ξ Ceti - -	4½	15 5 42	2 7 9·54	N. 8 19 44·1	S. 22 8	19 N. 61 S.
30	B.A.C. 741 -	6½	20 57 34	2 18 37·24	9 12 50·7	S. 5 46	34 N. 43 S.
30	ξ Arietis -	5½	21 6 30	2 18 54·72	10 6 38·2	S. 57 48	19 S. 80 S.
30	B.A.C. 755 -	6	22 6 2	2 20 51·15	10 4 8·3	S. 43 43	3 S. 80 S.
31	B.A.C. 830 -	6	6 6 58	2 36 33·28	10 16 14·4	N. 35 55	85 N. 3 S.
31	38 Arietis -	5	7 20 28	2 38 57·56	N. 11 58 53·4	S. 53 2	14 S. 78 S.
31	B.A.C. 987 -	6½	20 42 49	3 5 19·27	N. 12 37 48·5	N. 52 1	90 N. 18 N.

OCCULTATIONS VISIBLE AT GREENWICH.

*** The Angles are reckoned towards the right hand round the circumference of the Moon's image as seen in an inverting telescope.

Month and Day.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
			h m	h m	°	°	h m	h m	°	°
Jan. 10	μ Ceti - - -	4	2 14	6 52	113	107	3 37	8 15	301	315
12	δ ^o Tauri - - -	6	5 52	10 21	132	155	7 3	11 32	257	291
13	B.A.C. 1651 -	6½	10 9	14 34	99	140	11 11	15 36	268	308
14	χ ¹ Orionis - -	4½	0 9†	4 32	12	331				
17	35 Cancri - -	6½	2 17†	6 27	177	137				
18	8 Leonis - - -	6	6 43	10 49	86	51	7 59	12 4	244	221
24	ξ ¹ Libræ - - -	6	13 31†	17 12	153	140				
25	θ Libræ - - -	4½	14 59	18 36	99	91	16 2	19 39	217	219
26	B.A.C. 5663 -	6½	15 36	19 9	10	358	16 9	19 41	316	309
Feb. 6	ξ ¹ Ceti - - -	4	4 14†	7 6	25	48				
9	i Tauri - - -	5½	4 6	6 46	132	121	5 22	8 2	261	271
10	B.A.C. 1835 -	6½	8 28	11 3	131	167	9 27	12 2	234	275
12	63 Geminorum	5½	5 13	7 41	141	109	6 3	8 31	219	197
13	35 Cancri - -	6½	13 55†	16 18	165	206				
14	80 Cancri - -	6½	4 30†	6 51	172	131				
15	37 Leonis - -	6	11 31	13 46	121	141	12 12	14 27	190	216
Mar. 9	B.A.C. 1651 -	6½	4 44†	5 34	13	4				
9	B.A.C. 1733 -	6½	11 47	12 36	117	156	12 39	13 28	247	283
15	ι Leonis - - -	5	14 6	14 30	6	40	14 40	15 4	304	341
21	B.A.C. 5408 -	6½	14 31	14 32	66	50	15 44	15 45	252	248
25	4 Capricorni -	6	15 34†	15 19	61	25	16 30	16 15	303	272
Apr. 4	δ ^o Tauri - - -	4	11 11	10 18	79	117	12 3†	11 9	297	331
4	δ ^o Tauri - - -	6	11 53*	10 59	38	73	12 19†	11 25	338	11
5	B.A.C. 1563 -	5½	7 34	6 37	96	131	8 50	7 53	279	319
7	δ Geminorum	6	10 3	8 58	63	103	11 9	10 4	285	328
9	35 Cancri - -	6½	10 4	8 50	37	62	11 5	9 52	291	326
9	ι Cancri - - -	6	12 52	11 38	113	154	13 40	12 26	215	256
9	B.A.C. 2925 -	6½	13 15	12 1	137	179	13 42	12 28	190	232
9	42 Cancri - -	6½	13 20†	12 7	164	205				
10	8 Leonis - - -	6	15 22	14 4	110	151	16 5	14 47	212	251
11	37 Leonis - -	6	8 29	7 9	38	15	9 36	8 15	280	271
18	B.A.C. 5663 -	6½	15 37†	13 48	163	151				
19	B.A.C. 6088 -	6	18 28	16 34	139	145	19 11	17 17	211	223
20	B.A.C. 6448 -	6	14 8†	12 10	115	79	15 1	13 4	232	200
21	B.A.C. 6864 -	6	16 31†	14 29	1	332				
21	B.A.C. 6878 -	6½	17 12	15 11	55	30	18 9	16 7	313	296
22	γ Capricorni -	5½	18 28	16 23	146	124	19 21	17 15	236	221
May 3	B.A.C. 1835 -	6½	13 49†	11 1	1	33				
5	63 Geminorum	5½	12 49†	9 53	350	32				
6	B.A.C. 2788 -	6	13 18†	10 18	165	207				

OCCULTATIONS VISIBLE AT GREENWICH.

* * The Angles are reckoned towards the right hand round the circumference of the Moon's image as seen in an inverting telescope.

Month and Day.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
			h m	h m	°	°	h m.	h m	c	o
May 7	80 Cancri - -	6½	13 19	10 16	59	100	14 21	11 17	262	303
7	83 Cancri - -	6	16 40	13 36	107	143	17 23½	14 18	222	254
10	B.A.C. 3996 - -	6	17 14	13 58	8	47	17 44	14 27	305	344
12	80 Virginis - -	6	18 20	14 55	102	139	19 7*	15 42	213	252
14	♂ Libræ - -	6	15 21	11 49	105	105	16 17	12 45	209	219
15	B.A.C. 5408 - -	6½	10 52½	7 17	78	39	11 48	8 13	240	206
17	B.A.C. 6343 - -	6	18 7	14 23	114	110	19 13	15 29	242	248
17	26 Sagittarii - -	6	19 57	16 12	42	55	20 43	16 59	321	340
18	B.A.C. 6699 - -	6½	14 49½	11 2	61	25	15 45	11 57	294	263
18	53 Sagittarii - -	6	16 52	13 5	33	9	17 31	13 43	328	309
18	B.A.C. 6727 - -	6½	17 2	13 14	31	8	17 38	13 51	330	312
June 12	B.A.C. 5758 - -	6	21 10*	15 44	64	98	22 7½	16 40	284	322
13	B.A.C. 6088 - -	6	16 55½	11 26	171	161				
19	30 Piscium - -	5	20 28½	14 34	204	173				
July 6	80 Virginis - -	6	15 5	8 5	39	56	16 12	9 12	263	290
8	♂ Libræ - -	6	14 56	7 48	79	75	16 7	8 59	232	240
11	B.A.C. 6343 - -	6	19 4	11 43	132	137	19 56	12 36	226	239
11	26 Sagittarii - -	6	20 36	13 16	58	77	21 32	14 11	308	333
12	B.A.C. 6699 - -	6½	14 45½	7 22	84	47	15 46	8 23	272	241
12	53 Sagittarii - -	6	16 36	9 12	63	37	17 36	10 12	297	279
12	B.A.C. 6727 - -	6½	16 43	9 19	63	38	17 44	10 21	299	282
13	17 Capricorni - -	6	17 36	10 8	41	14	18 14	10 46	335	312
Aug. 6	B.A.C. 5758 - -	6	19 37	10 35	79	103	20 46	11 43	265	297
7	JUPITER - -	-	16 10	7 4	41	25	17 8	8 1	298	290
7	B.A.C. 6161 - -	6	21 25½	12 18	0	29				
11	56 Aquarii - -	6	1 30	16 7	79	107	2 21	16 57	332	5
13	33 Piscium - -	5	18 43	9 13	156	118	19 25	9 55	248	212
13	B.A.C. 17 - -	6	21 16	11 46	134	107	22 24	12 54	281	264
16	B.A.C. 830 - -	6	2 18½	16 35	209	205				
19	B.A.C. 1563 - -	5½	23 32	13 37	83	42	0 29	14 35	312	270
19	1 Tauri - -	5½	1 28½	15 33	198	159				
23	7 Cancri - -	6	1 9	14 59	143	107	1 40	15 30	211	173
Sept. 7	29 Aquarii - -	6	1 24½	14 15	24	54				
13	B.A.C. 987 - -	6½	2 29	14 55	94	85	3 43	16 9	319	328
16	5 Tauri - -	3½	0 39	12 54	56	14	1 22	13 37	334	292
18	8 Geminorum - -	3½	1 2½	13 9	4	324				
28	5 Libræ - -	6	19 55	7 24	5	40	20 17½	7 45	324	1
Oct. 1	24 Sagittarii - -	6	21 51	9 8	81	110	22 55½	10 11	287	322
3	B.A.C. 7049 - -	6	18 5	5 14	61	40	19 4	6 13	315	303
5	56 Aquarii - -	6	21 39	8 40	151	143	22 39	9 40	259	261

OCCULTATIONS VISIBLE AT GREENWICH.

* * The Angles are reckoned towards the right hand round the circumference of the Moon's image as seen in an inverting telescope.

Month and Day.	Star's Name.	Magnitude.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Ver- tex.			N. Point.	Ver- tex.
Oct. 7	B.A.C. 17 - -	6	^h 18 ^m 55	^h 5 ^m 48	123	86	^h 19 ^m 56	^h 6 ^m 49	284	249
10	B.A.C. 830 - -	6	22 19	9 1	162	124	23 4	9 45	251	215
13	1 Tauri - -	5½	20 40†	7 10	120	90	21 29	7 59	267	232
14	141 Tauri - -	6	22 30†	8 56	191	155				
14	B.A.C. 1970 -	6½	1 38	12 3	53	10	2 23	12 48	332	291
14	7 Geminorum	3½	4 39	15 4	75	50	5 57	16 21	300	297
15	44 Geminorum	6½	3 53	14 14	54	15	4 53	15 13	315	282
16	84 Geminorum	6½	2 19†	12 36	181	139				
17	39 Cancrī - - -	6	0 46†	10 59	356	322				
17	40 Cancrī - - -	6	0 48†	11 1	356	322				
28	B.A.C. 6161 -	6	21 15†	6 46	180	208				
29	B.A.C. 6576 -	6	21 4	6 31	103	120	22 14	7 41	272	299
Nov. 3	30 Piscium - -	5	0 34	9 41	125	132	1 48	10 55	298	317
3	33 Piscium - -	5	2 43	11 50	83	110	3 37	12 44	335	7
3	B.A.C. 17 - -	6	5 56†	15 2	25	63				
7	B.A.C. 987 -	6½	21 54	6 45	96	57	22 53	7 44	314	275
8	B.A.C. 1272 -	6	2 36†	11 23	23	2				
10	141 Tauri - -	6	9 29	18 7	62	103	10 30	19 8	297	340
17	1 Virginis - -	4½	5 54	14 4	53	14	6 53	15 3	264	225
28	29 Aquarii - -	6	1 8	8 36	149	177	2 1	9 29	260	293
29	1 Aquarii - -	4	20 23	3 48	105	83	21 36	5 1	304	292
Dec. 8	7 Geminorum	3½	22 26	5 16	90	56	23 19	6 8	289	251
8	4 Geminorum	3	2 45†	9 34	11	330				
9	44 Geminorum	6½	22 10†	4 55	55	27	22 49§	5 34	313	282
9	58 Geminorum	6	7 26	14 10	77	80	8 49	15 33	272	299
10	7 Cancrī - -	6½	1 15	7 56	109	70	2 10	8 51	252	211
15	B.A.C. 4104 -	6½	5 14†	11 35	77	40	6 10	12 31	240	202
15	1 Virginis - -	5	10 37†	16 57	149	130				
31	B.A.C. 830 -	6	23 46	5 5	155	123	0 45	6 3	264	240

† A near approach.

‡ Star below the horizon.

* Star setting.

§ Star rising.

MEAN TIME.

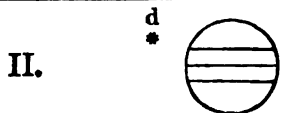
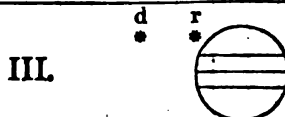
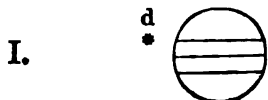
JANUARY.

Day.		h m s	Day.		h m s	Day.		h m s	Day.		h m s
1	III. Sh. I.	12 28	8	III. Tr. E.	21 5	16	I. Sh. E.	18 13	24	I. Ec. D.	15 2 57
	III. Tr. I.	14 5		II. Ec. D.	7 2 33		I. Tr. E.	18 52		I. Oc. R.	18 2
	I. Ec. D.	14 52 48	9	II. Oc. R.	10 39	17	I. Ec. D.	13 9 6	25	II. Sh. I.	6 23
	III. Sh. E.	14 54		I. Sh. I.	14 4		I. Oc. R.	16 2		II. Tr. I.	7 56
	III. Tr. E.	16 37		I. Tr. I.	14 37	18	II. Sh. I.	3 47		II. Sh. E.	8 58
	I. Oc. R.	17 30		I. Sh. E.	16 19		II. Tr. I.	5 7		II. Tr. E.	10 31
2	II. Ec. D.	4 28 6		I. Tr. E.	16 52		II. Sh. E.	6 21		I. Sh. I.	12 20
	II. Oc. R.	7 50	10	I. Ec. D.	11 15 13		II. Tr. E.	7 43		I. Tr. I.	13 7
	I. Sh. I.	12 11		I. Oc. R.	14 2		I. Sh. I.	10 26		I. Sh. E.	14 35
	I. Tr. I.	12 36	11	II. Sh. I.	1 11		I. Tr. I.	11 7		I. Tr. E.	15 22
	I. Sh. E.	14 25		II. Tr. I.	2 18		I. Sh. E.	12 41	26	I. Ec. D.	9 31 27
	I. Tr. E.	14 51		II. Sh. E.	3 45		I. Tr. E.	13 22		I. Oc. R.	12 32
3	I. Ec. D.	9 21 16		II. Tr. E.	4 54	19	I. Ec. D.	7 37 37		III. Ec. D.	14 30 44
	I. Oc. R.	12 1		I. Sh. I.	8 33		I. Oc. R.	10 32		III. Ec. R.	16 50 6
	II. Sh. I.	22 35		I. Tr. I.	9 7		III. Ec. D.	10 32 34		III. Oc. D.	17 37
	II. Tr. I.	23 29		I. Sh. E.	10 47		III. Ec. R.	12 50 41		III. Oc. R.	20 14
4	II. Sh. E.	1 9		I. Tr. E.	11 22		III. Oc. D.	13 13	27	II. Ec. D.	12 47 46
	II. Tr. E.	2 4	12	I. Ec. D.	5 43 44		III. Oc. R.	15 49		II. Oc. R.	5 36
	I. Sh. I.	6 39		III. Ec. D.	6 34 52		II. Ec. D.	22 53 48		I. Sh. I.	6 48
	I. Tr. I.	7 7		I. Oc. R.	8 32	20	II. Oc. R.	2 50		I. Tr. I.	7 37
	I. Sh. E.	8 54		III. Oc. R.	11 24		I. Sh. I.	4 55		I. Sh. E.	9 3
	I. Tr. E.	9 22		II. Ec. D.	20 19 39		I. Tr. I.	5 37		I. Tr. E.	9 52
5	III. Ec. D.	2 37 12	13	II. Oc. R.	0 3		I. Sh. E.	7 9	28	I. Ec. D.	3 59 50
	I. Ec. D.	3 49 47		I. Sh. I.	3 1		I. Tr. E.	7 52		I. Oc. R.	7 2
	I. Oc. R.	6 31		I. Tr. I.	3 37	21	I. Ec. D.	2 6 1		II. Sh. I.	19 41
	III. Oc. R.	6 56		I. Sh. E.	5 16		I. Oc. R.	5 2		II. Tr. I.	21 20
	II. Ec. D.	17 45 18		I. Tr. E.	5 52		II. Sh. I.	17 5		II. Sh. E.	22 16
	II. Oc. R.	21 15	14	I. Ec. D.	0 12 8		II. Tr. I.	18 32		II. Tr. E.	23 56
6	I. Sh. I.	1 8		I. Oc. R.	3 2		II. Sh. E.	19 40	29	I. Sh. I.	1 16
	I. Tr. I.	1 37		II. Sh. I.	14 29		II. Tr. E.	21 8		I. Tr. I.	2 7
	I. Sh. E.	3 22		II. Tr. I.	15 43		I. Sh. I.	23 23		I. Sh. E.	3 31
	I. Tr. E.	3 52		II. Sh. E.	17 4	22	I. Tr. I.	0 7		I. Tr. E.	4 22
	I. Ec. D.	22 18 13		II. Tr. E.	18 19		I. Sh. E.	1 38		I. Ec. D.	22 28 21
7	I. Oc. R.	1 1		I. Sh. I.	21 29		I. Tr. E.	2 22	30	I. Oc. R.	1 32
	II. Sh. I.	11 54		I. Tr. I.	22 7		I. Ec. D.	20 34 32		III. Sh. I.	4 20
	II. Tr. I.	12 54		I. Sh. E.	23 44		I. Oc. R.	23 32		III. Sh. E.	6 50
	II. Sh. E.	14 28	15	I. Tr. E.	0 22	23	III. Sh. I.	0 22		III. Tr. I.	7 43
	II. Tr. E.	15 30		I. Ec. D.	18 40 40		III. Sh. E.	2 51		III. Tr. E.	10 21
	I. Sh. I.	19 36		III. Sh. I.	20 24		III. Tr. I.	3 21		II. Ec. D.	14 44 40
	I. Tr. I.	20 7		I. Oc. R.	21 32		III. Tr. E.	5 58		II. Oc. R.	18 59
	I. Sh. E.	21 51		III. Sh. E.	22 52		II. Ec. D.	12 10 49		I. Sh. I.	19 45
	I. Tr. E.	22 22		III. Tr. I.	22 57		II. Oc. R.	16 13		I. Tr. I.	20 36
8	III. Sh. I.	16 26	16	III. Tr. E.	1 33		I. Sh. I.	17 51	31	I. Sh. E.	22 0
	I. Ec. D.	16 46 46		II. Ec. D.	9 36 47		I. Tr. I.	18 37		I. Tr. E.	22 52
	III. Tr. I.	18 31		II. Oc. R.	13 26		I. Sh. E.	20 6		I. Ec. D.	16 56 46
	III. Sh. E.	18 53		I. Sh. I.	15 58		I. Tr. E.	20 52		I. Oc. R.	20 2
	I. Oc. R.	19 31		I. Tr. I.	16 37						

MEAN TIME.

JANUARY.

Phases of the Eclipses of the Satellites for an inverting Telescope.



Configurations at 19^h for an inverting Telescope.

Day.	West.	East.
1	2 3 O 1	4
2	3 1 O	2 4
3	3 O 2 1 4	
4	2 3 4 O	
5	4 O 1 3	2 ●
6	4 1 O	2 3
7	4 2 O 1	3
8	O 3 4 2 O	1 ●
9	4 3 1 O	2
10	4 3 O	1 2
11	4 2 3 1 O	
12	4 2 O	3 1
13	1 O	4 2 3
14	2 O 1	3 4
15	2 O 3	4 1 ●
16	3 1 O	2 4
17	3 O	1 2 4
18	3 1 O	4
19	2 O 3 1	4
20	1 O	4 2 3
21	O 2 4 O 1	3
22	4 2 1 O	3
23	O 1 4 3 O	2
24	4 3 O	1 2
25	4 3 2 1 O	
26	4 2 O	1 3 ●
27	4 1 O	2 3
28	4 O 2 1	3
29	2 1 4 O	3
30	3 O	4
31	3 O	2 4 1 ●

MEAN TIME.





FEBRUARY.

Day.	h m s	Day.	h m s	Day.	h m s	Day.	h m s
1	II. Sh. I. 8 59 II. Tr. I. 10 43 II. Sh. E. 11 34 II. Tr. E. 13 19 I. Sh. I. 14 13 I. Tr. I. 15 6 I. Sh. E. 16 28 I. Tr. E. 17 22	8	II. Sh. I. 11 35 II. Tr. I. 13 30 II. Sh. E. 14 10 II. Tr. E. 16 6 I. Sh. I. 16 6 I. Tr. I. 17 5 I. Sh. E. 18 21 I. Tr. E. 19 20	15	II. Sh. I. 14 11 II. Tr. I. 16 15 II. Sh. E. 16 46 I. Sh. I. 18 0 II. Tr. E. 18 52 I. Tr. I. 19 2 I. Sh. E. 20 15 I. Tr. E. 21 18	22	I. Oc. R. 1 58 II. Sh. I. 16 47 II. Tr. I. 19 0 II. Sh. E. 19 23 I. Sh. I. 19 53 I. Tr. I. 21 0 II. Tr. E. 21 36 I. Sh. E. 22 8 I. Tr. E. 23 16
2	I. Ec. D. 11 25 15 I. Oc. R. 14 32 III. Ec. D. 18 28 40 III. Ec. R. 20 49 17 III. Oc. D. 21 58	9	I. Ec. D. 13 19 0 I. Oc. R. 16 31 III. Ec. D. 22 27 5	16	I. Ec. D. 15 12 44 I. Oc. R. 18 30	23	I. Ec. D. 17 6 25 I. Oc. R. 20 28
3	III. Oc. R. 0 37 II. Ec. D. 4 1 32 II. Oc. R. 8 21 I. Sh. I. 8 41 I. Tr. I. 9 36 I. Sh. E. 10 56 I. Tr. E. 11 51	10	III. Ec. R. 0 48 57 III. Oc. D. 2 18 III. Oc. R. 4 59 II. Ec. D. 6 35 9 I. Sh. I. 10 35 II. Oc. R. 11 6 I. Tr. I. 11 34 I. Sh. E. 12 50 I. Tr. E. 13 50	17	III. Ec. D. 2 24 50 III. Ec. R. 4 47 58 III. Oc. D. 6 36 II. Ec. D. 9 8 37 III. Oc. R. 9 17 I. Sh. I. 12 28 I. Tr. I. 13 32 II. Oc. R. 13 48 I. Sh. E. 14 43 I. Tr. E. 15 48	24	III. Ec. D. 6 22 29 III. Ec. R. 8 46 51 III. Oc. D. 10 50 II. Ec. D. 11 41 57 III. Oc. R. 13 33 I. Sh. I. 14 21 I. Tr. I. 15 29 II. Oc. R. 16 30 I. Sh. E. 16 36 I. Tr. E. 17 45
4	I. Ec. D. 5 53 37 I. Oc. R. 9 2 II. Sh. I. 22 17	11	I. Ec. D. 7 47 22 I. Oc. R. 11 1	18	I. Ec. D. 9 41 5 I. Oc. R. 12 59	25	I. Ec. D. 11 34 46 I. Oc. R. 14 57
5	II. Tr. I. 0 7 II. Sh. E. 0 52 II. Tr. E. 2 43 I. Sh. I. 3 10 I. Tr. I. 4 6 I. Sh. E. 5 25 I. Tr. E. 6 21	12	II. Sh. I. 0 54 II. Tr. I. 2 53 II. Sh. E. 3 29 I. Sh. I. 5 3 II. Tr. E. 5 30 I. Tr. I. 6 4 I. Sh. E. 7 18 I. Tr. E. 8 19	19	II. Sh. I. 3 30 II. Tr. I. 5 38 II. Sh. E. 6 5 I. Sh. I. 6 56 I. Tr. I. 8 1 II. Tr. E. 8 15 I. Sh. E. 9 11 I. Tr. E. 10 17	26	II. Sh. I. 6 6 II. Tr. I. 8 22 II. Sh. E. 8 41 I. Sh. I. 8 49 I. Tr. I. 9 59 II. Tr. E. 10 59 I. Sh. E. 11 4 I. Tr. E. 12 14
6	I. Ec. D. 0 22 8 I. Oc. R. 3 32 III. Sh. I. 8 17 III. Sh. E. 10 49 III. Tr. I. 12 3 III. Tr. E. 14 42 II. Ec. D. 17 18 21 I. Sh. I. 21 38 II. Oc. R. 21 44 I. Tr. I. 22 35 I. Sh. E. 23 53	13	I. Ec. D. 2 15 52 I. Oc. R. 5 31 III. Sh. I. 12 15 III. Sh. E. 14 47 III. Tr. I. 16 21 III. Tr. E. 19 2 II. Ec. D. 19 51 53 I. Sh. I. 23 31	20	I. Ec. D. 4 9 34 I. Oc. R. 7 29 III. Sh. I. 16 12 III. Sh. E. 18 46 III. Tr. I. 20 36 II. Ec. D. 22 25 17 III. Tr. E. 23 19	27	I. Ec. D. 6 3 15 I. Oc. R. 9 27 III. Sh. I. 20 10 III. Sh. E. 22 45
7	III. Tr. E. 14 42 II. Ec. D. 17 18 21 I. Sh. I. 21 38 II. Oc. R. 21 44 I. Tr. I. 22 35 I. Sh. E. 23 53 I. Tr. E. 0 51 I. Ec. D. 18 50 32 I. Oc. R. 22 2	14	II. Ec. D. 19 51 53 I. Sh. I. 23 31 II. Oc. R. 0 27 I. Tr. I. 0 33 I. Sh. E. 1 46 I. Tr. E. 2 49 I. Ec. D. 20 44 15 I. Oc. R. 0 0	21	I. Sh. I. 1 25 I. Tr. I. 2 31 II. Oc. R. 3 9 I. Sh. E. 3 40 I. Tr. E. 4 46 I. Ec. D. 22 37 57	28	III. Tr. I. 0 49 II. Ec. D. 0 58 34 I. Sh. I. 3 18 III. Tr. E. 3 34 I. Tr. I. 4 28 I. Sh. E. 5 33 II. Oc. R. 5 50 I. Tr. E. 6 43

MEAN TIME.

FEBRUARY.

Phases of the Eclipses of the Satellites for an inverting Telescope.

<p>I. d • </p>	<p>III. d r • • </p>
<p>II. d • </p>	<p>IV. No Eclipse  of this Satellite.</p>

Configurations at 18^h for an inverting Telescope.

Day.	West.	East.
1	•3 2• I• ○	•4
2	•2 •3 ○	•1 4•
3	I• ○	•2 •3 4•
4	○	2• I• 3• 4•
5	2• •I ○	3• 4•
6	3• ○	1• 4• •2 ●
7	3• 4• I ○	2•
8	○ I• 2• ○	2• ○
9	4• •2 •3 ○ •I	•I
10	4• I• ○	•2 •3
11	•4 ○	•1 •2 3•
12	•4 2• •I ○	3•
13	○ 3• •4 •2 ○	I•
14	3• •4 •I ○	2•
15	○ 2• •3 ○ 4•	•1
16	•2 •3 ○	•4 •I ●
17	I• ○	•2 •3 •4
18	○	•I 2• •3 4•
19	2• •I ○	3• 4•
20	•2 ○ 3•	I• 4•
21	3• •I ○	•2 4•
22	•3 ○ 2• I•	4•
23	•3 ○ 4•	•I ●
24	4• I• ○ •2 •3	
25	4• •I 2• •3	
26	4• •2 ○	•3
27	4• •2 ○	3• I•
28	•4 3• •I ○	•2

MEAN TIME.

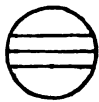
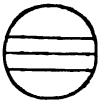
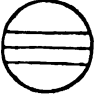

MARCH.

Day.	h m s	Day.	h m s	Day.	h m s	Day.	h m s
1	I. Ec. D. 0 31 37 I. Oc. R. 3 56 II. Sh. I. 19 23 II. Tr. I. 21 43 I. Sh. I. 21 46 II. Sh. E. 21 59 I. Tr. I. 22 57	9	II. Tr. I. 0 25 II. Sh. E. 0 35 I. Tr. I. 0 52 I. Sh. E. 1 54 II. Tr. E. 3 2 I. Tr. E. 3 8 I. Ec. D. 20 53 44	16	I. Sh. E. 3 47 I. Tr. E. 5 4 II. Tr. E. 5 42 I. Ec. D. 22 47 23 I. Oc. R. 2 17 III. Ec. D. 18 15 29 II. Ec. D. 19 21 27 I. Sh. I. 20 0 III. Ec. R. 20 43 35 I. Tr. I. 21 16 I. Sh. E. 22 15 III. Oc. D. 23 15 I. Tr. E. 23 32	24	I. Ec. D. 0 41 1 I. Oc. R. 4 12 I. Sh. I. 21 53 II. Ec. D. 21 54 31 III. Ec. D. 22 13 19 I. Tr. I. 23 10 I. Sh. E. 0 9 III. Ec. R. 0 42 40 I. Tr. E. 1 26 II. Oc. R. 3 1 III. Oc. D. 3 17 III. Oc. R. 6 6 I. Ec. D. 19 9 21 I. Oc. R. 22 41
2	I. Sh. E. 0 1 II. Tr. E. 0 20 I. Tr. E. 1 13 I. Ec. D. 19 0 5 I. Oc. R. 22 25	10	I. Oc. R. 0 22 III. Ec. D. 14 17 26 III. Ec. R. *16 44 17 II. Ec. D. *16 48 22 I. Sh. I. †18 7 III. Oc. D. 19 10 I. Tr. I. 19 21 I. Sh. E. 20 22 I. Tr. E. 21 37 II. Oc. R. 21 49 III. Oc. R. 21 56	17	II. Oc. R. 0 26 III. Oc. R. 2 3 I. Ec. D. *17 15 43 I. Oc. R. 20 46 II. Sh. I. 13 54 I. Sh. I. 14 28 I. Tr. I. †15 45 II. Tr. I. *16 25 II. Sh. E. *16 31 I. Sh. E. *16 44 I. Tr. E. †18 1 II. Tr. E. 19 3	25	I. Sh. I. *16 21 II. Sh. I. *16 30 I. Tr. I. †17 38 I. Sh. E. 18 37 II. Tr. I. 19 2 II. Sh. E. 19 7 I. Tr. E. 19 55 II. Tr. E. 21 40 I. Ec. D. 13 37 48 I. Oc. R. †17 9
3	III. Ec. D. 10 19 55 III. Ec. R. 12 45 32 II. Ec. D. 14 15 12 III. Oc. D. †15 1 I. Sh. I. †16 14 I. Tr. I. *17 26 III. Oc. R. *17 46 I. Sh. E. †18 29 II. Oc. R. 19 10 I. Tr. E. 19 42	11	I. Ec. D. †15 22 4 I. Oc. R. 18 51 II. Sh. I. 21 18 I. Sh. I. 22 35 II. Tr. I. 13 46 I. Tr. I. 13 50 II. Sh. E. 13 54 I. Sh. E. 14 51 I. Tr. E. †16 6 II. Tr. E. †16 23	18	II. Tr. E. 19 3 I. Ec. D. 11 44 11 I. Oc. R. 15 15 III. Sh. I. 8 2 II. Ec. D. 8 37 59 I. Sh. I. 8 57 I. Tr. I. 10 13 III. Sh. E. 10 41 I. Sh. E. 11 12 I. Tr. E. 12 29 III. Tr. I. 13 9 II. Oc. R. 13 44 III. Tr. E. *15 57	26	I. Sh. I. *16 21 II. Sh. I. *16 30 I. Tr. I. †17 38 I. Sh. E. 18 37 II. Tr. I. 19 2 II. Sh. E. 19 7 I. Tr. E. 19 55 II. Tr. E. 21 40 I. Ec. D. 13 37 48 I. Oc. R. †17 9
4	I. Ec. D. 13 28 26 I. Oc. R. *16 54	12	II. Sh. I. 21 18 I. Sh. I. 22 35 II. Tr. I. 13 46 I. Tr. I. 13 50 II. Sh. E. 13 54 I. Sh. E. 14 51 I. Tr. E. †16 6 II. Tr. E. †16 23	19	II. Tr. E. 19 3 I. Ec. D. 11 44 11 I. Oc. R. 15 15 III. Sh. I. 8 2 II. Ec. D. 8 37 59 I. Sh. I. 8 57 I. Tr. I. 10 13 III. Sh. E. 10 41 I. Sh. E. 11 12 I. Tr. E. 12 29 III. Tr. I. 13 9 II. Oc. R. 13 44 III. Tr. E. *15 57	27	I. Ec. D. 13 37 48 I. Oc. R. †17 9 I. Sh. I. 10 50 II. Ec. D. 11 11 3 III. Sh. I. 11 59 I. Tr. I. 12 7 I. Sh. E. 13 5 I. Tr. E. †14 23 III. Sh. E. †14 39 II. Oc. R. *16 18 III. Tr. I. †17 8 III. Tr. E. 19 57
5	II. Sh. I. 8 42 I. Sh. I. 10 42 II. Tr. I. 11 5 II. Sh. E. 21 18 I. Tr. I. 12 55 I. Sh. E. 12 58 II. Tr. E. 13 42 I. Tr. E. 14 11	13	I. Ec. D. 9 50 33 I. Oc. R. 13 20 III. Sh. I. 4 5 II. Ec. D. 6 4 54 III. Sh. E. 6 43 I. Sh. I. 7 4 I. Tr. I. 8 19 III. Tr. I. 9 6 I. Sh. E. 9 19 I. Tr. E. 10 35 II. Oc. R. 11 8 III. Tr. E. 11 53	20	II. Tr. E. 19 3 I. Ec. D. 11 44 11 I. Oc. R. 15 15 III. Sh. I. 8 2 II. Ec. D. 8 37 59 I. Sh. I. 8 57 I. Tr. I. 10 13 III. Sh. E. 10 41 I. Sh. E. 11 12 I. Tr. E. 12 29 III. Tr. I. 13 9 II. Oc. R. 13 44 III. Tr. E. *15 57	28	I. Sh. I. 10 50 II. Ec. D. 11 11 3 III. Sh. I. 11 59 I. Tr. I. 12 7 I. Sh. E. 13 5 I. Tr. E. †14 23 III. Sh. E. †14 39 II. Oc. R. *16 18 III. Tr. I. †17 8 III. Tr. E. 19 57
6	I. Ec. D. 7 56 54 I. Oc. R. 11 23	14	III. Sh. I. 4 5 II. Ec. D. 6 4 54 III. Sh. E. 6 43 I. Sh. I. 7 4 I. Tr. I. 8 19 III. Tr. I. 9 6 I. Sh. E. 9 19 I. Tr. E. 10 35 II. Oc. R. 11 8 III. Tr. E. 11 53	21	II. Tr. E. 19 3 I. Ec. D. 11 44 11 I. Oc. R. 15 15 III. Sh. I. 8 2 II. Ec. D. 8 37 59 I. Sh. I. 8 57 I. Tr. I. 10 13 III. Sh. E. 10 41 I. Sh. E. 11 12 I. Tr. E. 12 29 III. Tr. I. 13 9 II. Oc. R. 13 44 III. Tr. E. *15 57	29	I. Ec. D. 8 6 10 I. Oc. R. 11 37 I. Sh. I. 5 18 II. Sh. I. 5 48 I. Tr. I. 6 35 I. Sh. E. 7 33 II. Tr. I. 8 20 II. Sh. E. 8 24 I. Tr. E. 8 51 II. Tr. E. 10 58
7	III. Sh. I. 0 8 II. Sh. E. 2 44 II. Ec. D. 3 31 47 III. Tr. I. 5 0 I. Sh. I. 5 11 I. Tr. I. 6 23 I. Sh. E. 7 26 III. Tr. E. 7 45 II. Oc. R. 8 30 I. Tr. E. 8 39	15	I. Ec. D. 4 18 55 I. Oc. R. 7 49 II. Sh. I. 0 36 I. Sh. I. 1 32 I. Tr. I. 2 48 II. Tr. I. 3 5 II. Sh. E. 3 12	22	II. Tr. E. 19 3 I. Ec. D. 11 44 11 I. Oc. R. 15 15 III. Sh. I. 8 2 II. Ec. D. 8 37 59 I. Sh. I. 8 57 I. Tr. I. 10 13 III. Sh. E. 10 41 I. Sh. E. 11 12 I. Tr. E. 12 29 III. Tr. I. 13 9 II. Oc. R. 13 44 III. Tr. E. *15 57	30	I. Sh. I. 5 18 II. Sh. I. 5 48 I. Tr. I. 6 35 I. Sh. E. 7 33 II. Tr. I. 8 20 II. Sh. E. 8 24 I. Tr. E. 8 51 II. Tr. E. 10 58
8	I. Ec. D. 2 25 16 I. Oc. R. 5 53 II. Sh. I. 21 59 I. Sh. I. 23 39	16	II. Sh. I. 0 36 I. Sh. I. 1 32 I. Tr. I. 2 48 II. Tr. I. 3 5 II. Sh. E. 3 12	23	II. Tr. E. 19 3 I. Ec. D. 11 44 11 I. Oc. R. 15 15 III. Sh. I. 8 2 II. Ec. D. 8 37 59 I. Sh. I. 8 57 I. Tr. I. 10 13 III. Sh. E. 10 41 I. Sh. E. 11 12 I. Tr. E. 12 29 III. Tr. I. 13 9 II. Oc. R. 13 44 III. Tr. E. *15 57	31	I. Ec. D. 2 34 39 I. Oc. R. 6 6 I. Sh. I. 23 46

MEAN TIME.

MARCH.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I. $\overset{d}{\bullet}$ 	III. $\overset{d}{\bullet}$ $\overset{r}{\bullet}$ 
II. $\overset{d}{\bullet}$ 	IV. No Eclipse  of this Satellite.

Configurations at 17^h for an inverting Telescope.

Day.	West.	East.
1	4 3	○ 2. 1.
2	4 32. 1	○
3	4	○ 1. 3 2 ●
4		○ 2. 3
5		○ 4 3.
6	2	○ 13. 4
7	1	○ 2. 4
8	3.	○ 1. 4.
9	3 2. 1	○ 4.
10		3 ○ 1. 4. 2 ●
11		○ 1. 2. 1 ●
12		1. ○ 4. 3.
13	24.	○ 1. 3.
14	4. 1. 3.	○ 2.
15	4. 3.	○ 1. 2.
16	4. 3. 2. 1	○
17	4	1. ○ 2.
18	4 1	○ 1. 2.
19	○ 1. ○ 2. 4	○ 3.
20	2 4	○ 1. 3.
21	1. 3.	○ 1. 2.
22	3.	○ 1. 2. 4
23	3 1	○ 4
24	2	○ 1. 4
25	1	○ 3. 2. 4.
26		○ 2. 3 4.
27	2	○ 3. 4. 1 ●
28	1. 3.	○ 4.
29	3.	○ 1. 2.
30	3 4. 1	○
31	4. 3. 2	○ 1.

8 JUPITER'S SATELLITES, 1889.

MEAN TIME.

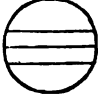
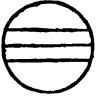
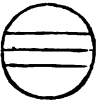

APRIL.

h m s			Day.	h m s			Day.	h m s			Day.	h m s			Day.
II. Ec. D.	0 27	35	8	I. Sh. E.	3 55		15	II. Oc. R.	10 35		22	III. Oc. R.	21 34		
I. Tr. I.	1 3			I. Tr. E.	5 11			III. Ec. R.	12 40	8	23	I. Ec. D.	2 44	0	
I. Sh. E.	2 2			III. Ec. D.	6 9	23		III. Oc. D.	*14 58			I. Oc. R.	6 9		
III. Ec. D.	2 11	39		II. Oc. R.	8 5			III. Oc. R.	17 49			I. Sh. I.	23 53		
I. Tr. E.	3 19			III. Ec. R.	8 41	14	16	I. Ec. D.	0 50	18	24	I. Tr. I.	1 3		
III. Ec. R.	4 42	16		III. Oc. D.	11 9			I. Oc. R.	4 18			I. Sh. E.	2 9		
II. Oc. R.	5 34			III. Oc. R.	†13 59			I. Sh. I.	22 0			II. Sh. I.	2 55		
III. Oc. D.	7 15			I. Ec. D.	22 56	38		I. Tr. I.	23 14			I. Tr. E.	3 19		
III. Oc. R.	10 5			I. Oc. R.	2 27		17	I. Sh. E.	0 16			II. Tr. I.	5 12		
I. Ec. D.	21 2	59	9	I. Sh. I.	20 7			II. Sh. I.	0 19			II. Sh. E.	5 32		
I. Oc. R.	0 34			I. Tr. I.	21 23			I. Tr. E.	1 30			II. Tr. E.	7 51		
I. Sh. I.	18 14			II. Sh. I.	21 43			II. Tr. I.	2 43			I. Ec. D.	21 12	29	
II. Sh. I.	19 7			I. Sh. E.	22 23			II. Sh. E.	2 56			I. Oc. R.	0 36		
I. Tr. I.	19 31			I. Tr. E.	23 39			II. Tr. E.	5 21			I. Sh. I.	18 22		
I. Sh. E.	20 30			II. Tr. I.	0 11		18	I. Ec. D.	19 18	47		I. Tr. I.	19 30		
II. Tr. I.	21 38			II. Sh. E.	0 20			I. Oc. R.	22 46			I. Sh. E.	20 38		
II. Sh. E.	21 43			II. Tr. E.	2 50			I. Sh. I.	†16 29			II. Ec. D.	21 23	40	
I. Tr. E.	21 47			I. Ec. D.	17 25	6		I. Tr. I.	17 41			I. Tr. E.	21 47		
II. Tr. E.	0 16			I. Oc. R.	20 55			I. Sh. E.	18 44			II. Oc. R.	2 14		
I. Ec. D.	*15 31	27	11	I. Sh. I.	*14 36			II. Ec. D.	18 50	25		III. Sh. I.	3 50		
I. Oc. R.	19 2			I. Tr. I.	*15 51			I. Tr. E.	19 57			III. Sh. E.	6 35		
I. Sh. I.	12 43			II. Ec. D.	*16 17	14		II. Oc. R.	23 48			III. Tr. I.	8 24		
II. Ec. D.	†13 44	8		I. Sh. E.	†16 51			III. Sh. I.	23 52			III. Tr. E.	11 16		
I. Tr. I.	†13 59			I. Tr. E.	18 7		19	III. Sh. E.	2 36			I. Ec. D.	*15 40	53	
I. Sh. E.	†14 58			III. Sh. I.	19 54			III. Tr. I.	4 41			I. Oc. R.	19 4		
III. Sh. I.	*15 57			II. Oc. R.	21 20			III. Tr. E.	7 32			I. Sh. I.	†12 50		
I. Tr. E.	*16 13			III. Sh. E.	22 37			I. Ec. D.	†13 47	10		I. Tr. I.	*13 58		
III. Sh. E.	18 38			III. Tr. I.	0 55		20	I. Oc. R.	17 14			I. Sh. E.	*15 6		
II. Oc. R.	18 50			III. Tr. E.	3 45			I. Sh. I.	10 57			II. Sh. I.	†16 12		
III. Tr. I.	21 3			I. Ec. D.	11 53	29		I. Tr. I.	12 8			I. Tr. E.	†16 14		
III. Tr. E.	23 53			I. Oc. R.	*15 23			I. Sh. E.	†13 13			II. Tr. I.	18 25		
I. Ec. D.	9 59	49	13	I. Sh. I.	9 4			II. Sh. I.	†13 36			II. Sh. E.	18 50		
I. Oc. R.	13 31			I. Tr. I.	10 18			I. Tr. E.	*14 25			II. Tr. E.	21 4		
I. Sh. I.	7 11			II. Sh. I.	11 0			II. Tr. I.	*15 57			I. Ec. D.	10 9	23	
II. Sh. I.	8 24			I. Sh. E.	11 19			II. Sh. E.	†16 14			I. Oc. R.	*13 31		
I. Tr. I.	8 27			I. Tr. E.	12 35			II. Tr. E.	18 36			I. Sh. I.	7 18		
I. Sh. E.	9 26			II. Tr. I.	†13 27		21	I. Ec. D.	8 15	39		I. Tr. I.	8 25		
I. Tr. E.	10 43			II. Sh. E.	†13 37			I. Oc. R.	11 41			I. Sh. E.	9 34		
II. Tr. I.	10 54			II. Tr. E.	*16 5		22	I. Sh. I.	5 25			II. Ec. D.	10 40	19	
II. Sh. E.	11 1			I. Ec. D.	6 21	57		I. Tr. I.	6 36			I. Tr. E.	10 41		
II. Tr. E.	13 33			I. Oc. R.	9 51			I. Sh. E.	7 41			II. Oc. R.	*15 27		
I. Ec. D.	4 28	18	15	I. Sh. I.	3 32			II. Ec. D.	8 7	1		III. Ec. D.	18 2	18	
I. Oc. R.	7 59			I. Tr. I.	4 46			I. Tr. E.	8 52			III. Ec. R.	20 37	51	
I. Sh. I.	1 39			II. Ec. D.	5 33	48		II. Oc. R.	†13 2			III. Oc. D.	22 23		
I. Tr. I.	2 55			I. Sh. E.	5 48			III. Ec. D.	*14 4	35	30	III. Oc. R.	1 14		
II. Ec. D.	3 0 40			I. Tr. E.	7 2			III. Ec. R.	†16 38	55		I. Ec. D.	4 37	45	
				III. Ec. D.	10 7	2		III. Oc. D.	18 43			I. Oc. R.	7 58		

MEAN TIME.

APRIL.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.	d •		III.	d •	r •	
II.	d •		IV.	No Eclipse		of this Satellite.

Configurations at 15^h 30^m for an inverting Telescope.

Day.	West.				East.			
1		4.		•1	○	•3	•2	
2		•4			○	1.	•3	
3		•4		2.	•1	○	3.	
4	○1.	•4			○	3.		•2
5			•4	3.	○	•1	2.	
6			•3		•4	○		
7			•3	•2	○	1.		
8				•1	○	•3	•2	•4
9					○	1.2.	•3	•4
10			2.	•1	○		3.	•4
11				•2	○1.	3.		4.
12			3.		○	•1	2.	4.
13	○2.		3.		1.	○		4.
14			•3	•2	○	•1	4.	
15				•1	4.	○	•2	•3
16			4.		○	1.2.	•3	
17		4.		2.	•1	○		3.
18		4.		•2	○1.	3.		
19		•4		3.	○		•2	•1
20		•4	3.		1.2	○		
21		•4	•3	•2	○	•1		
22			•4	1.	○	•2		•3
23				•4	○	1.2.	•3	
24				•1	○	•4	3.	
25				•2	○	1.	3.	•4
26				3.1	○	•2		•4
27	○1.		3.		○	2.		4.
28			•3	•2	○	•1		4.
29				1.	○	•2		4.
30					○	1.	2.	4.

MEAN TIME.

MAY.

Day		h m s	Day		h m s	Day		h m s	Day		h m s
1	I. Sh. I.	1 47	8	II. Sh. I.	8 7	16	I. Ec. D.	2 53 54	24	I. Sh. E.	4 11
	I. Tr. I.	2 52		II. Tr. I.	10 4		I. Oc. R.	6 0		I. Tr. E.	4 55
	I. Sh. E.	4 3		II. Sh. E.	10 45	17	I. Sh. I.	0 2		II. Ec. D.	7 38 6
	I. Tr. E.	5 8		II. Tr. E.	12 43		I. Tr. I.	0 53		II. Oc. R.	*11 39
	II. Sh. I.	5 31	9	I. Ec. D.	1 0 2		I. Sh. E.	2 18		III. Sh. I.	19 41
	II. Tr. I.	7 39		I. Oc. R.	4 13		I. Tr. E.	3 9		III. Tr. I.	22 29
	II. Sh. E.	8 9		I. Sh. I.	22 8		II. Ec. D.	5 4 14		III. Sh. E.	22 30
	II. Tr. E.	10 18		I. Tr. I.	23 6		II. Oc. R.	9 21		I. Ec. D.	23 16 18
	I. Ec. D.	23 6 15	10	I. Sh. E.	0 24		III. Sh. I.	15 43	25	III. Tr. E.	1 22
2	I. Oc. R.	2 25		I. Tr. E.	1 23		III. Sh. E.	18 31		I. Oc. R.	2 13
	I. Sh. I.	20 15		II. Ec. D.	2 30 34		III. Tr. I.	19 4		I. Sh. I.	20 23
	I. Tr. I.	21 19		II. Oc. R.	7 1		I. Ec. D.	21 22 20		I. Tr. I.	21 4
	I. Sh. E.	22 31		III. Sh. I.	11 46	18	III. Tr. E.	21 56		I. Sh. E.	22 40
	I. Tr. E.	23 36		III. Sh. E.	*14 32		I. Oc. R.	0 27	26	I. Tr. E.	23 21
	II. Ec. D.	23 57 2		III. Tr. I.	15 35		I. Sh. I.	18 30		II. Sh. I.	2 36
3	II. Oc. R.	4 38		III. Tr. E.	18 27		I. Tr. I.	19 19		II. Tr. I.	3 57
	III. Sh. I.	7 48		I. Ec. D.	19 28 27		I. Sh. E.	20 46		II. Sh. E.	5 15
	III. Sh. E.	10 34		I. Oc. R.	22 40		I. Tr. E.	21 36		II. Tr. E.	6 36
	III. Tr. I.	12 2	11	I. Sh. I.	16 37		II. Sh. I.	0 0		I. Ec. D.	17 44 51
	III. Tr. E.	*14 54		I. Tr. I.	17 33		II. Tr. I.	1 37		I. Oc. R.	20 39
	I. Ec. D.	17 34 39		I. Sh. E.	18 53		II. Sh. E.	2 39	27	I. Sh. I.	14 52
	I. Oc. R.	20 52		I. Tr. E.	19 50		II. Tr. E.	4 16		I. Tr. I.	15 31
4	I. Sh. I.	*14 43		II. Sh. I.	21 25		I. Ec. D.	15 50 53		I. Sh. E.	17 8
	I. Tr. I.	15 46		II. Tr. I.	23 16		I. Oc. R.	18 54		I. Tr. E.	17 47
	I. Sh. E.	16 59	12	II. Sh. E.	0 3		I. Sh. I.	*12 58	28	II. Ec. D.	20 55 9
	I. Tr. E.	18 2		II. Tr. E.	1 54		I. Tr. I.	*13 46		II. Oc. R.	0 47
	II. Sh. I.	18 48		I. Ec. D.	*13 56 59		I. Sh. E.	15 15		III. Ec. D.	9 55 41
	II. Tr. I.	20 52		I. Oc. R.	17 7		I. Tr. E.	16 2		I. Ec. D.	*12 13 18
	II. Sh. E.	21 26	13	I. Sh. I.	11 5		II. Ec. D.	18 21 10		I. Oc. R.	*15 5
	II. Tr. E.	23 30		I. Tr. I.	12 0		II. Oc. R.	22 30		III. Oc. R.	15 15
5	I. Ec. D.	12 3 9		I. Sh. E.	*13 21	21	III. Ec. D.	5 57 30	29	I. Sh. I.	9 20
	I. Oc. R.	*15 19		I. Tr. E.	*14 16		III. Ec. R.	8 36 40		I. Tr. I.	9 57
6	I. Sh. I.	9 12		II. Ec. D.	15 47 23		III. Oc. D.	8 58		I. Sh. E.	*11 37
	I. Tr. I.	10 12		II. Oc. R.	20 11		I. Ec. D.	10 19 18		I. Tr. E.	*12 13
	I. Sh. E.	11 28	14	III. Ec. D.	1 58 47		III. Oc. R.	11 51		II. Sh. I.	15 55
	I. Tr. E.	12 29		III. Ec. R.	4 36 45		I. Oc. R.	*13 20		II. Tr. I.	17 7
	II. Ec. D.	*13 13 46		III. Oc. D.	5 31	22	I. Sh. I.	7 27		II. Sh. E.	18 34
	II. Oc. R.	17 50		III. Oc. R.	8 23		I. Tr. I.	8 12		II. Tr. E.	19 46
	III. Ec. D.	22 0 37		I. Ec. D.	8 25 23		I. Sh. E.	9 43	30	I. Ec. D.	6 41 51
7	III. Ec. R.	0 37 23		I. Oc. R.	11 34		I. Tr. E.	10 28		I. Oc. R.	9 32
	III. Oc. D.	1 59	15	I. Sh. I.	5 33		II. Sh. I.	*13 19	31	I. Sh. I.	3 49
	III. Oc. R.	4 50		I. Tr. I.	6 26		II. Tr. I.	*14 48		I. Tr. I.	4 23
	I. Ec. D.	6 31 32		I. Sh. E.	7 49		II. Sh. E.	15 57		I. Sh. E.	6 5
	I. Oc. R.	9 46		I. Tr. E.	8 43		II. Tr. E.	17 27		I. Tr. E.	6 39
8	I. Sh. I.	3 40		II. Sh. I.	10 43	23	I. Ec. D.	4 47 50		II. Ec. D.	10 12 11
	I. Tr. I.	4 39		II. Tr. I.	*12 27		I. Oc. R.	7 46		II. Oc. R.	*13 56
	I. Sh. E.	5 56		II. Sh. E.	*13 21	24	I. Sh. I.	1 55		III. Sh. I.	23 39
	I. Tr. E.	6 56		II. Tr. E.	*15 6		I. Tr. I.	2 38			

MEAN TIME.

MAY.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



III.



II.



IV.



Configurations at 14^h for an inverting Telescope.

Day.	<i>West.</i>			<i>East.</i>		
1		1 2.	○	4.	3.	
2		2 4.	○	1.	3.	
3	○ 3.	4.	1	○	2.	
4		4.	3.	○	1. 2.	
5		4.	3 2.	○		1 ●
6		4	3 1.	○		2 ●
7		4		○	1 3 2.	
8		4	1. 2.	○		3
9			2	○	1. 3.	
10			1	○	2	
11		3.		○	1. 2. 4	
12		3 2.	○		4	1 ●
13	○ 1.	3	2	○		4
14				○	3 2.	4.
15	○ 2.		1.	○	3	4.
16		2		○	1. 3. 4.	
17			1	○	3 4.	
18		3.		○	4. 1. 2.	
19		3	1	○		
20	○ 1.	4.	3 2.	○		
21		4.		○	3 2.	
22		4	1. 2.	○		3
23		4	2	○	1	3.
24		4	1	○	2 3.	
25		4	3.	○	1. 2.	
26		3	4. 1	○		
27			3 2	○	1. 4	
28				○	2 4	3 ● 1 ●
29			1.	○	2. 3	4
30		2		○	1	3.
31			1.	○	2 3.	4.

MEAN TIME.

JUNE.

Day.		h m s	Day.		h m s	Day.		h m s	Day.		h m s
1	I. Ec. D.	1 10 20	9	I. Sh. I.	0 11	16	II. Sh. I.	*10 24	23	II. Sh. E.	†15 40
	III. Tr. I.	1 52		I. Tr. I.	0 33		II. Tr. I.	*10 47		II. Tr. E.	†15 41
	III. Sh. E.	2 30		I. Sh. E.	2 27		II. Sh. E.	*13 4	24	I. Oc. D.	1 20
	I. Oc. R.	3 58		I. Tr. E.	2 50		II. Tr. E.	*13 27		I. Oc. R.	3 36
	III. Tr. E.	4 44		II. Sh. I.	7 48		I. Ec. D.	23 27 18		I. Tr. I.	22 26
	I. Sh. I.	22 17		II. Tr. I.	8 32	17	I. Oc. R.	1 52		I. Sh. I.	22 27
	I. Tr. I.	22 49		II. Sh. E.	†10 28		I. Sh. I.	20 33	25	I. Tr. E.	0 43
2	I. Sh. E.	0 33		II. Tr. E.	*11 11		I. Tr. I.	20 43		I. Sh. E.	0 44
	I. Tr. E.	1 6		I. Ec. D.	21 33	4	I. Sh. E.	22 50		II. Oc. D.	7 8
	II. Sh. I.	5 12	10	I. Oc. R.	0 8		I. Tr. E.	22 59		II. Ec. R.	*9 47 38
	II. Tr. I.	6 15		I. Sh. I.	18 39	18	II. Ec. D.	4 38 31		I. Oc. D.	19 46
	II. Sh. E.	7 51		I. Tr. I.	18 59		II. Oc. R.	7 33		I. Ec. R.	22 2 21
	II. Tr. E.	8 54		I. Sh. E.	20 56		I. Ec. D.	17 55 49	26	III. Oc. D.	1 35
	I. Ec. D.	19 38 55		I. Tr. E.	21 16		I. Oc. R.	20 18		III. Ec. R.	4 34 39
	I. Oc. R.	22 24	11	II. Ec. D.	2 34 9	19	III. Ec. D.	21 50 27		I. Tr. I.	16 53
3	I. Sh. I.	16 46		II. Oc. R.	5 19		III. Oc. R.	1 11		I. Sh. I.	16 56
	I. Tr. I.	17 15		I. Ec. D.	16 1 33		I. Sh. I.	†15 2		I. Tr. E.	19 9
	I. Sh. E.	19 2		III. Ec. D.	17 52 2		I. Tr. I.	†15 9		I. Sh. E.	19 13
	I. Tr. E.	19 32		I. Oc. R.	18 34		I. Sh. E.	17 18	27	II. Tr. I.	2 10
	II. Ec. D.	23 29 21		III. Oc. R.	21 54		I. Tr. E.	17 25		II. Sh. I.	2 18
4	II. Oc. R.	3 4	12	I. Sh. I.	*13 8		II. Sh. I.	23 43		II. Tr. E.	4 49
	III. Ec. D.	*13 53 52		I. Tr. I.	*13 25		II. Tr. I.	23 56		II. Sh. E.	4 58
	I. Ec. D.	*14 7 23		IV. Ec. D.	†15 4 49	20	II. Sh. E.	2 22		I. Oc. D.	*14 12
	I. Oc. R.	16 50		I. Sh. E.	†15 24		II. Tr. E.	2 35		I. Ec. R.	16 30 59
	III. Oc. R.	18 35		IV. Ec. R.	†15 33 16		I. Ec. D.	*12 24 26	28	I. Tr. I.	*11 18
5	I. Sh. I.	*11 14		I. Tr. E.	†15 42		I. Oc. R.	†14 44		I. Sh. I.	*11 24
	I. Tr. I.	*11 41		II. Sh. I.	21 7		IV. Sh. I.	23 44		I. Tr. E.	*13 35
	I. Sh. E.	*13 30		II. Tr. I.	21 40	21	IV. Sh. E.	0 34		I. Sh. E.	*13 41
	I. Tr. E.	*13 58		II. Sh. E.	23 46		IV. Tr. I.	0 46		II. Oc. D.	20 15
	II. Sh. I.	18 31	13	II. Tr. E.	0 19		IV. Tr. E.	1 0		II. Ec. R.	23 5 17
	II. Tr. I.	19 24		I. Ec. D.	*10 30	9	I. Sh. I.	†9 30	29	IV. Oc. D.	7 58
	II. Sh. E.	21 10		I. Oc. R.	*13 0		I. Tr. I.	†9 35		IV. Oc. R.	†8 24
	II. Tr. E.	22 3	14	I. Sh. I.	7 36		I. Sh. E.	*11 47		I. Oc. D.	†8 38
6	I. Ec. D.	8 35 57		I. Tr. I.	7 51		I. Tr. E.	*11 51		IV. Ec. D.	†8 47 43
	I. Oc. R.	*11 16		I. Sh. E.	†9 53		II. Ec. D.	17 55 52		IV. Ec. R.	*9 54 55
7	I. Sh. I.	5 42		I. Tr. E.	†10 7		II. Oc. R.	20 40		I. Ec. R.	*10 59 35
	I. Tr. I.	6 7		II. Ec. D.	†15 21	3	I. Ec. D.	6 52 59		III. Tr. I.	†15 3
	I. Sh. E.	7 59		II. Oc. R.	18 26	22	I. Oc. R.	†9 10		III. Sh. I.	15 34
	I. Tr. E.	8 24		I. Ec. D.	4 58 41		III. Sh. I.	*11 35		III. Tr. E.	17 56
	II. Ec. D.	*12 46 30	15	I. Oc. R.	7 26		III. Tr. I.	*11 47		III. Sh. E.	18 29
	II. Oc. R.	16 11		III. Sh. I.	7 37		III. Tr. E.	*14 29	30	I. Tr. I.	5 44
8	I. Ec. D.	3 4 27		III. Tr. I.	8 30		III. Tr. E.	†14 39		I. Sh. I.	5 53
	III. Sh. I.	3 38		III. Sh. E.	*10 30	23	I. Sh. I.	3 59		I. Tr. E.	8 1
	III. Tr. I.	5 11		III. Tr. E.	*11 23		I. Tr. I.	4 1		I. Sh. E.	8 10
	I. Oc. R.	5 42	16	I. Sh. I.	2 5		I. Sh. E.	6 16		II. Tr. I.	†15 17
	III. Sh. E.	6 29		I. Tr. I.	2 17		I. Tr. E.	6 17		II. Sh. I.	15 36
	III. Tr. E.	8 4		I. Sh. E.	4 21		II. Sh. I.	*13 0		II. Tr. E.	17 57
				I. Tr. E.	4 33		II. Tr. I.	*13 2		II. Sh. E.	18 16

MEAN TIME.

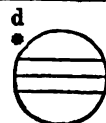
JUNE.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



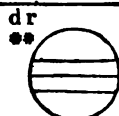
III.



II.



IV.



Configurations at 12^h 30^m for an inverting Telescope.

Day.	<i>West.</i>			<i>East.</i>		
1		3.	○	1. 2.		4.
2		3.	1 2. ○			4.
3		3	2 ○	1. 4.		
4			3 4. ○		2	
5	○ 1.		4.	○	2.	3
6		4.	2.	○ 1.		3.
7		4.		1. 2 ○		3.
8		4		3. ○	1 2.	
9		4	3.	1 2. ○		
10		4	3 2	○	1.	
11			4 2	○	2	
12			4 ○ 1.	2. 3		
13			2.	○	4	3. -1 ●
14			1. 4	○	3.	4
15			3.	○	1 2.	4
16	○ 2.		3.	1 ○		4.
17		3	2 ○	1.		4.
18			3	○	2	4.
19				○	1. 2 4.	
20			2.	○	4.	3 -1 ●
21			3 1. ○		3.	
22	○ 3.		4.	○	1 2	
23		4.	3. 1. 2 ○			
24		4.	3 2	○	1.	
25		4		3 1 ○	2	
26		4		○	1. 3 2.	
27		4	2. 1 ○			3
28	○ 1.		4 2	○		3.
29				○	2	
30			3. 1. ○	2.		4

MEAN TIME.

JULY.

Day.		h m s	Day.		h m s	Day.		h m s	Day.		h m s
1	I. Oc. D.	3 4	9	I. Sh. I.	2 16	16	II. Oc. D.†	13 53	24	IV. Sh. E.†	13 12
	I. Ec. R.	5 28 15		I. Tr. E.	4 11		II. Ec. R.	17 35 24		III. Oc. D.	14 52
2	I. Tr. I.	0 10		I. Sh. E.	4 33	17	I. Oc. D.	0 59		III. Oc. R.	17 46
	I. Sh. I.	0 22		II. Oc. D.*	11 37		I. Ec. R.	3 46 5		III. Ec. D.	17 46 3
	I. Tr. E.	2 27		II. Ec. R.	14 59 12		III. Oc. D.*	11 30		III. Ec. R.	20 35 45
	I. Sh. E.	2 38		I. Oc. D.	23 14		III. Ec. R.	16 35 37		I. Tr. I.	23 52
	II. Oc. D.†	9 22	10	I. Ec. R.	1 51 25		I. Tr. I.	22 6	25	I. Sh. I.	0 34
	II. Ec. R.*	12 23 17		III. Oc. D.	8 10		I. Sh. I.	22 39		I. Tr. E.	2 8
	I. Oc. D.	21 30		III. Ec. R.*	12 55 27	18	I. Tr. E.	0 22		I. Sh. E.	2 51
	I. Ec. R.	23 56 50		I. Tr. I.	20 21		I. Sh. E.	0 56		II. Tr. I.*	11 15
3	III. Oc. D.	4 52		I. Sh. I.	20 45		II. Tr. I.†	8 57		II. Sh. I.†	12 42
	III. Ec. R.†	8 34 47		I. Tr. E.	20 37		II. Sh. I.*	10 6		II. Tr. E.	13 54
	I. Tr. I.	18 37		I. Sh. E.	23 2		II. Tr. E.*	11 37		II. Sh. E.	15 22
	I. Sh. I.	18 50	11	II. Tr. I.	6 41		II. Sh. E.*	12 46		I. Oc. D.	21 11
	I. Tr. E.	20 53		II. Sh. I.	7 30		I. Oc. D.	19 25	26	I. Ec. R.	0 9 33
	I. Sh. E.	21 7		II. Tr. E.*	9 20		I. Ec. R.	22 14 47		I. Tr. I.	18 18
4	II. Tr. I.	4 25		II. Sh. E.*	10 10	19	I. Tr. I.	16 32		I. Sh. I.	19 3
	II. Sh. I.	4 54		I. Oc. D.	17 40		I. Sh. I.	17 8		I. Tr. E.	20 35
	II. Tr. E.	7 4		I. Ec. R.	20 20 6		I. Tr. E.	18 49		I. Sh. E.	21 20
	II. Sh. E.	7 34	12	I. Tr. I.	14 47		I. Sh. E.	19 25	27	II. Oc. D.	5 20
	I. Oc. D.	15 56		I. Sh. I.	15 13	20	II. Oc. D.	3 2		II. Ec. R.*	9 29 56
	I. Ec. R.	18 25 30		I. Tr. E.	17 4		II. Ec. R.	6 53 22		I. Oc. D.	15 38
5	I. Tr. I.*	13 3		I. Sh. E.	17 30		I. Oc. D.†	13 52		I. Ec. R.	18 38 14
	I. Sh. I.*	13 19	13	II. Oc. D.	0 45		I. Ec. R.	16 43 27	28	III. Tr. I.	4 25
	I. Tr. E.	15 19		II. Ec. R.	4 17 4	21	III. Tr. I.	1 0		III. Tr. E.	7 19
	I. Sh. E.	15 36		I. Oc. D.*	12 6		III. Sh. I.	3 31		III. Sh. I.	7 31
	II. Oc. D.	22 29		I. Ec. R.	14 48 44		III. Tr. E.	3 54		III. Sh. E.*	10 30
6	II. Ec. R.	141 2		III. Tr. I.	21 39		III. Sh. E.	6 30		I. Tr. I.†	12 45
	I. Oc. D.*	10 22		III. Sh. I.	23 32		I. Tr. I.*	10 59		I. Sh. I.	13 32
	I. Ec. R.*	12 54 7	14	III. Tr. E.	0 22		I. Sh. I.*	11 37		I. Tr. E.	15 1
	III. Tr. I.	18 20		III. Sh. E.	2 29		I. Tr. E.†	13 15		I. Sh. E.	15 49
	III. Sh. I.	19 33		I. Tr. I.†	9 13	22	I. Sh. E.†	13 54	29	II. Tr. I.	0 24
	III. Tr. E.	21 13		I. Sh. I.*	9 42		II. Tr. I.	22 5		II. Sh. I.	1 59
	III. Sh. E.	22 29		I. Tr. E.*	11 30		II. Sh. I.	23 24		II. Tr. E.	3 3
7	I. Tr. I.	7 29		I. Sh. E.*	11 59		II. Tr. E.	0 45		II. Sh. E.	4 40
	I. Sh. I.	7 48		II. Tr. I.	19 49	23	II. Sh. E.	2 4		I. Oc. D.*	10 4
	I. Tr. E.*	9 45		II. Sh. I.	20 48		I. Oc. D.†	8 18		I. Ec. R.†	13 6 59
	I. Sh. E.*	10 5		II. Tr. E.	22 28		I. Ec. R.*	11 12 11	30	I. Tr. I.	7 12
	IV. Tr. I.†	14 53		II. Sh. E.	23 28		I. Tr. I.	5 25		I. Sh. I.†	8 0
	IV. Tr. E.	15 36	15	I. Oc. D.	6 33		I. Sh. I.	6 6		I. Tr. E.*	9 28
	II. Tr. I.	17 33		I. Ec. R.*	9 17 28		I. Tr. E.	7 42		I. Sh. E.*	10 18
	IV. Sh. I.	17 35		IV. Oc. D.	22 8		I. Sh. E.†	8 23		II. Oc. D.	18 30
	II. Sh. I.	18 12		IV. Oc. R.	22 59		II. Oc. D.	16 11		II. Ec. R.	22 42 36
	IV. Sh. E.	18 55	16	IV. Ec. D.	2 39 12		II. Ec. R.	20 11 53	31	I. Oc. D.	4 31
	II. Tr. E.	20 12		I. Tr. I.	3 40	24	I. Oc. D.	2 45		I. Ec. R.	7 35 40
	II. Sh. E.	20 52		IV. Ec. R.	4 9 51		IV. Tr. I.	5 24		III. Oc. D.	18 18
8	I. Oc. D.	4 48		I. Sh. I.	4 11		I. Ec. R.	5 40 50		III. Oc. R.	21 12
	I. Ec. R.	7 22 49		I. Tr. E.	5 56		IV. Tr. E.	6 26		III. Ec. D.	21 45 4
9	I. Tr. I.	1 55		I. Sh. E.	6 28		IV. Sh. I.*	11 30			

MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



r

III.



r

II.



r

IV.



d r

Configurations at 10^h 30^m for an inverting Telescope.

Day.	West.	East.
1	3 2. 1. 1.	4.
2	3 1. 1.	4. 2. 1.
3	1. 2.	4.
4	1. 2.	3. 4.
5	2. 1.	3. 4.
6	2. 1.	3. 2. 4. 1.
7	3. 1. 4. 2.	1.
8	3. 2. 4. 1.	1.
9	4. 3. 1. 2.	1.
10	4. 1. 2.	3.
11	4. 1. 2.	3.
12	4. 2. 1.	3.
13	4. 1. 2.	3.
14	1. 4. 3. 1.	2.
15	3. 2. 4. 1.	1.
16	3. 1. 2. 1.	4.
17	1. 3. 1. 2.	4.
18	1. 1. 3. 4.	4.
19	2. 1. 3. 4.	4.
20	1. 2. 3. 4.	4.
21	3. 1. 2. 4.	4.
22	3. 2. 1. 4.	1.
23	3. 2. 1. 4.	1.
24	4. 1. 2.	1.
25	4. 1. 2. 3.	1.
26	4. 2. 1. 3.	1.
27	4. 1. 2. 3.	1.
28	4. 3. 1. 2.	1.
29	4. 3. 2. 1.	1.
30	4. 3. 2. 1.	1.
31	4. 3. 1. 2.	1.

MEAN TIME.

AUGUST.

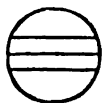
Day.		h m s	Day.		h m s	Day.		h m s	Day.		h m s
1	III. Ec. R.	0 35 54	8	II. Tr. I.	15 55	16	I. Oc. D.	2 35	24	I. Tr. E.	3 50
	I. Tr. I.	1 38		II. Sh. I.	17 53		I. Ec. R.	5 54 15		I. Sh. E.	5 1
	I. Sh. I.	2 29		II. Tr. E.	18 35		I. Tr. I.	23 43		II. Oc. D.	14 56
	I. Tr. E.	3 55		II. Sh. E.	20 34	17	I. Sh. I.	0 48		II. Ec. R.	19 58 34
	I. Sh. E.	4 46		I. Oc. D.	0 46		I. Tr. E.	2 0		I. Oc. D.	22 52
	IV. Oc. D.	12 53	9	I. Ec. R.	3 59 18		I. Sh. E.	3 5	25	I. Ec. R.	2 17 58
	II. Tr. I.	13 34		IV. Tr. I.	20 38		II. Oc. D.	12 28		III. Tr. I.	18 44
	IV. Oc. R.	14 4		I. Tr. I.	21 54		II. Ec. R.	17 21 5		I. Tr. I.	20 1
	II. Sh. I.	15 17		IV. Tr. E.	21 57		I. Oc. D.	21 2		I. Sh. I.	21 12
	II. Tr. E.	16 13		I. Sh. I.	22 53	18	I. Ec. R.	0 22 58		III. Tr. E.	21 40
	II. Sh. E.	17 58		I. Tr. E.	0 10		IV. Oc. D.	4 29		I. Tr. E.	22 18
	IV. Ec. D.	20 34 31	10	I. Sh. E.	1 10		IV. Oc. R.	5 56		I. Sh. E.	23 30
	IV. Ec. R.	22 23 40		IV. Sh. I.	5 28		IV. Ec. D.	14 31 16		III. Sh. I.	23 30
	I. Oc. D.	22 58		IV. Sh. E.	7 28		III. Tr. I.	15 3	26	III. Sh. E.	2 34
2	I. Ec. R.	2 4 24		II. Oc. D.	*10 3		IV. Ec. R.	16 36 12		II. Tr. I.	* 9 56
	I. Tr. I.	20 5		II. Ec. R.	14 43 49		III. Tr. E.	17 59		II. Sh. I.	12 21
	I. Sh. I.	20 58		I. Oc. D.	19 13		I. Tr. I.	18 11		II. Tr. E.	12 37
	I. Tr. E.	22 22		I. Ec. R.	22 28 0		I. Sh. I.	19 17		IV. Tr. I.	12 45
	I. Sh. E.	23 15		III. Tr. I.	† 11 26		III. Sh. I.	19 30		IV. Tr. E.	12 40
3	II. Oc. D.	7 41	11	III. Tr. E.	14 21		I. Tr. E.	20 28		II. Sh. E.	15 3
	II. Ec. R.	† 12 6 45		III. Sh. I.	15 30		I. Sh. E.	21 35		I. Oc. D.	17 20
	I. Oc. D.	17 25		I. Tr. I.	16 21		III. Sh. E.	22 33		I. Ec. R.	20 46 46
	I. Ec. R.	20 33 5		I. Sh. I.	17 22	19	II. Tr. I.	† 7 30		IV. Sh. I.	23 29
4	III. Tr. I.	† 7 54		III. Sh. E.	18 32		II. Sh. I.	* 9 46	27	IV. Sh. E.	1 43
	III. Tr. E.	*10 49		I. Tr. E.	18 38		II. Tr. E.	*10 10		I. Tr. I.	14 29
	III. Sh. I.	*11 31		I. Sh. E.	19 39		II. Sh. E.	12 28		I. Sh. I.	15 41
	III. Sh. E.	14 32		II. Tr. I.	5 6		I. Oc. D.	15 30		I. Tr. E.	16 46
	I. Tr. I.	14 32	12	II. Sh. I.	7 11		I. Ec. R.	18 51 45		I. Sh. E.	17 59
	I. Sh. I.	15 27		II. Tr. E.	† 7 46	20	I. Tr. I.	12 38	28	II. Oc. D.	4 10
	I. Tr. E.	16 49		II. Sh. E.	* 9 52		I. Sh. I.	13 46		II. Ec. R.	* 9 17 47
	I. Sh. E.	17 44		I. Oc. D.	13 40		I. Tr. E.	14 55		I. Oc. D.	11 48
5	II. Tr. I.	2 44		I. Ec. R.	16 56 47		I. Sh. E.	16 3		I. Ec. R.	15 15 30
	II. Sh. I.	4 35		I. Tr. I.	*10 48	21	II. Oc. D.	1 42	29	III. Oc. D.	* 8 46
	II. Tr. E.	5 24	13	I. Sh. I.	† 11 51		II. Ec. R.	6 40 12		I. Tr. I.	* 8 57
	II. Sh. E.	7 16		I. Tr. E.	13 5		I. Oc. D.	* 9 57		I. Sh. I.	† 10 10
	I. Oc. D.	† 11 52		I. Sh. E.	14 8		I. Ec. R.	13 20 29		I. Tr. E.	† 11 14
	I. Ec. R.	15 1 52		II. Oc. D.	23 16	22	III. Oc. D.	5 2		III. Oc. R.	11 42
6	I. Tr. I.	* 8 59		I. Tr. I.	† 11 25 29		I. Tr. I.	7 6		I. Sh. E.	12 27
	I. Sh. I.	* 9 55	14	II. Ec. R.	4 2 47		III. Oc. R.	† 7 58		III. Ec. D.	13 44 1
	I. Tr. E.	*11 16		I. Oc. D.	† 8 7		I. Sh. I.	* 8 15		III. Ec. R.	16 39 16
	I. Sh. E.	† 12 13		I. Ec. R.	† 11 25 29		I. Tr. E.	* 9 22		II. Tr. I.	23 10
	II. Oc. D.	20 52	15	III. Oc. D.	1 23		III. Ec. D.	* 9 43 52	30	II. Sh. I.	1 39
7	II. Ec. R.	1 25 35		III. Oc. R.	4 18		I. Sh. E.	† 10 32		II. Tr. E.	1 51
	I. Oc. D.	6 19		I. Tr. I.	5 15		III. Ec. R.	12 38 2		II. Sh. E.	4 21
	I. Ec. R.	* 9 30 33		III. Ec. D.	5 44 12		II. Tr. I.	20 43		I. Oc. D.	6 16
	III. Oc. D.	21 48		I. Sh. I.	6 20		II. Sh. I.	23 4		I. Ec. R.	* 9 44 15
8	II. Oc. R.	0 43		I. Tr. E.	† 7 32	23	II. Tr. E.	23 23	31	I. Tr. I.	3 25
	III. Ec. D.	1 44 18		I. Sh. E.	* 8 37		II. Sh. E.	1 46		I. Sh. I.	4 39
	I. Tr. I.	3 26		III. Ec. R.	* 8 37 16		I. Oc. D.	4 25		I. Tr. E.	5 42
	III. Ec. R.	4 36 16		II. Tr. I.	18 18		I. Ec. R.	† 7 49 14		I. Sh. E.	† 6 56
	I. Sh. I.	4 24		II. Sh. I.	20 28	24	I. Tr. I.	1 33		II. Oc. D.	17 26
	I. Tr. E.	5 43		II. Tr. E.	20 58		I. Sh. I.	2 43		II. Ec. R.	22 36 13
	I. Sh. E.	6 41		II. Sh. E.	23 10						

MEAN TIME.

AUGUST.

Phases of the Eclipses of the Satellites for an inverting Telescope.

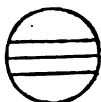
I.



III.



II.



IV.

Configurations at 9^h for an inverting Telescope.

Day.	West.	East.
1		I. 4. 2. 3.
2		2. 1. 4. 3.
3		1. 3. 4. 2.
4	3.	1. 2. 4.
5	3. 2.	4.
6	1. 3. 2.	4.
7	3.	2. 4. 1.
8	1.	3. 4.
9	2.	1. 3.
10	1. 4. 2.	3.
11	4.	3. 1. 2.
12	4. 3. 1. 2.	
13	4. 3. 2.	1.
14	4. 3.	2. 1.
15	4. 1. 3. 2.	
16	4. 2.	1. 3.
17	4. 1. 2.	3.
18		4. 3. 1. 2.
19	2. 3. 1.	4.
20	3. 2.	1. 4.
21	3. 1. 2.	4.
22	1. 3. 2.	4.
23	2. 1. 3.	4.
24	1.	3. 4.
25		1. 2. 4.
26	3. 1. 2.	
27	3. 2. 4.	1.
28	4. 3. 1.	2.
29	1. 4.	2. 3.
30	4. 2.	3. 1.
31	4. 2. 1.	3.

MEAN TIME.
SEPTEMBER.

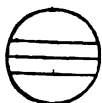
Day.	h m s	Day.	h m s	Day.	h m s	Day.	h m s
1	I. Oc. D. 0 44	9	I. Sh. I. 1 3	16	III. Tr. I. † 6 17	23	III. Sh. E. 18 39
	I. Ec. R. 4 12 59		I. Tr. E. 2 3		III. Tr. E. † 9 16		II. Tr. I. 20 3
	I. Tr. I. 21 53		III. Tr. I. 2 22		III. Sh. I. 11 30		II. Sh. I. 22 43
	III. Tr. I. 22 30		I. Sh. E. 3 21		III. Sh. E. 14 38		II. Tr. E. 22 44
	I. Sh. I. 23 8		III. Tr. E. 5 20		II. Tr. I. 17 28		
2	I. Tr. E. 0 10		III. Sh. I. * 7 30		II. Sh. I. 20 7	24	I. Oc. D. 0 53
	I. Sh. E. 1 25		III. Sh. E. 10 36		II. Tr. E. 20 9		II. Sh. E. 1 26
	III. Tr. E. 1 27		II. Tr. I. 14 55		II. Sh. E. 22 50		I. Ec. R. 4 26 55
	III. Sh. I. 3 30		II. Sh. I. 17 32		I. Oc. D. 22 59		I. Tr. I. 22 5
	III. Sh. E. 6 35		II. Tr. E. 17 36				I. Sh. I. 23 23
	II. Tr. I. 12 25		II. Sh. E. 20 15	17	I. Ec. R. 2 31 53	25	I. Tr. E. 0 22
	II. Sh. I. 14 57		I. Oc. D. 21 5		I. Tr. I. 20 9		I. Sh. E. 1 41
	II. Tr. E. 15 5	10	I. Ec. R. 0 36 50		I. Sh. I. 21 28		II. Oc. D. 14 28
	II. Sh. E. 17 39		I. Tr. I. 18 15		I. Tr. E. 22 26		I. Oc. D. 19 22
	I. Oc. D. 19 12		I. Sh. I. 19 32		I. Sh. E. 23 45		II. Ec. R. 19 49 39
	I. Ec. R. 22 41 47		I. Tr. E. 20 32	18	II. Oc. D. 11 50		I. Ec. R. 22 55 41
			I. Sh. E. 21 49		II. Ec. R. 17 11 31	26	I. Tr. I. 16 34
3	I. Tr. I. 16 21		II. Oc. D. † 9 15		I. Oc. D. 17 27		I. Sh. I. 17 52
	I. Sh. I. 17 37	11	II. Ec. R. 14 33 29		I. Ec. R. 21 0 38		I. Tr. E. 18 51
	I. Tr. E. 18 38		I. Oc. D. 15 33	19	I. Tr. I. 14 38		I. Sh. E. 20 10
	I. Sh. E. 19 54		I. Ec. R. 19 5 35		I. Sh. I. 15 57	27	III. Oc. D. 0 24
	IV. Oc. D. 21 2				I. Tr. E. 16 55		III. Oc. R. 3 25
	IV. Oc. R. 22 44	12	IV. Tr. I. 5 49		I. Sh. E. 18 14		III. Ec. D. 5 42 6
4	II. Oc. D. † 6 41		IV. Tr. E. * 7 38		III. Oc. D. 20 23		III. Ec. R. † 8 41 35
	IV. Ec. D. * 8 29 36		I. Tr. I. 12 43		III. Oc. R. 23 22		II. Tr. I. † 9 21
	IV. Ec. R. † 10 48 21		I. Sh. I. 14 1	20	III. Ec. D. 1 42 31		II. Sh. I. 12 0
	II. Ec. R. 11 55 34		I. Tr. E. 15 0		III. Ec. R. 4 40 58		II. Tr. E. 12 2
	I. Oc. D. 13 40		I. Sh. E. 16 18		II. Tr. I. † 6 45		I. Oc. D. 13 51
	I. Ec. R. 17 10 32		III. Oc. D. 16 27		II. Sh. I. † 9 25		II. Sh. E. 14 43
5	I. Tr. I. 10 49		IV. Sh. I. 17 30		II. Tr. E. † 9 26		I. Ec. R. 17 24 26
	I. Sh. I. 12 5		III. Oc. R. 19 25		I. Oc. D. 11 56	28	I. Tr. I. 11 3
	III. Oc. D. 12 34		IV. Sh. E. 19 58		II. Sh. E. 12 8		I. Sh. I. 12 21
	I. Tr. E. 13 6		III. Ec. D. 21 43 4		IV. Oc. D. 14 32		I. Tr. E. 13 20
	I. Sh. E. 14 23	13	II. Ec. R. 0 40 28		I. Ec. R. 15 29 24		I. Sh. E. 14 39
	III. Oc. R. 15 32		II. Tr. I. 4 11		IV. Oc. R. 16 29		IV. Tr. I. 23 47
	III. Ec. D. 17 43 36		II. Sh. I. † 6 50	21	IV. Ec. D. 2 29 34	29	IV. Tr. E. 1 51
	III. Ec. R. 20 39 55		II. Tr. E. † 6 52		IV. Ec. R. 5 0 55		II. Oc. D. † 3 48
6	II. Tr. I. 1 40		II. Sh. E. † 9 33		I. Tr. I. † 9 7		I. Oc. D. † 8 20
	II. Sh. I. 4 15		I. Oc. D. 10 1		I. Sh. I. 10 25		II. Ec. R. † 9 8 13
	II. Tr. E. 4 20		I. Ec. R. 13 34 21		I. Tr. E. 11 24		IV. Sh. I. 11 32
	II. Sh. E. † 6 57	14	I. Tr. I. * 7 12		I. Sh. E. 12 43		I. Ec. R. 11 53 10
	I. Oc. D. * 8 8		I. Sh. I. * 8 30	22	II. Oc. D. 1 9		IV. Sh. E. 14 13
	I. Ec. R. 11 39 18		I. Tr. E. † 9 29		I. Oc. D. † 6 25	30	I. Tr. I. 5 32
7	I. Tr. I. 5 18		I. Sh. E. 10 47		II. Ec. R. † 6 30 4		I. Sh. I. * 6 50
	I. Sh. I. † 6 34		II. Oc. D. 22 32		I. Ec. R. 9 58 8		I. Tr. E. * 7 49
	I. Tr. E. * 7 35	15	II. Ec. R. 3 52 0	23	I. Tr. I. 3 36		I. Sh. E. † 9 8
	I. Sh. E. * 8 52		I. Oc. D. 4 30		I. Sh. I. 4 54		III. Tr. I. 14 20
	II. Oc. D. 19 58		I. Ec. R. * 8 3 5		I. Tr. E. 5 53		III. Tr. E. 17 21
8	II. Ec. R. 1 14 2	16	I. Tr. I. 1 41		I. Sh. E. * 7 12		III. Sh. I. 19 31
	I. Oc. D. 2 36		I. Sh. I. 2 59		III. Tr. I. 10 17		II. Tr. I. 22 39
	I. Ec. R. 6 8 2		I. Tr. E. 3 58		III. Tr. E. 13 17		III. Sh. E. 22 40
	I. Tr. I. 23 46		I. Sh. E. 5 16		III. Sh. I. 15 31		

MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



r

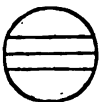
III.



d

r

II.



r

IV.



d

r

Configurations at 8^h for an inverting Telescope.

Day.	West.	East.
1	4	○ 1 2
2	4 13	○ 2
3	3 2 4	○ 1
4	3 1	○ 4 2 ●
5	3	○ 1 2 4
6	2 1	○ 3 4
7	2 1	○ 3 4
8		○ 1 2 3 4
9	1 3	○ 2 4
10	3 2	○ 1 4
11	3 1 2	○ 4
12	3	○ 1 2
13	4 2	○ 3
14	○ 1 4 2	○ 3
15	4	○ 2 3 1 ●
16	○ 3 4 1	○ 2
17	4 3 2	○ 1
18	4 3 1 2	○
19	4 3	○ 1 2
20	○ 2 1 4	○ 3
21	2	○ 1 4 3
22		○ 2 3 4 1 ●
23	1	○ 3 2 4
24	3 2	○ 1 4
25	3 1 2	○ 4
26	3	○ 1 2 4
27	1 2	○ 4 3 ●
28	2	○ 1 4 3
29	4 1	○ 3 2 ●

MEAN TIME.

OCTOBER.

Day.	h m s	Day.	h m s	Day.	h m s	Day.	h m s
1	II. Sh. I. 1 18 II. Tr. E. 1 21 I. Oc. D. 2 49 II. Sh. E. 4 1 I. Ec. R.† 6 21 57	8	II. Sh. E.* 6 36 I. Ec. R.† 8 16 58	16	IV. Sh. I.† 5 35 I. Tr. E.* 6 14 I. Sh. E.† 7 28 IV. Sh. E. 8 28 II. Oc. D. 22 34	24	IV. Oc. D. 3 59 II. Ec. R.* 6 22 37 IV. Oc. R.* 6 25 I. Ec. R.† 6 35 38 IV. Ec. D. 14 30 10 IV. Ec. R. 17 23 35
2	I. Tr. I. 0 1 I. Sh. I. 1 19 I. Tr. E. 2 18 I. Sh. E. 3 36 II. Oc. D. 17 8 I. Oc. D. 21 18 II. Ec. R. 22 27 51	9	I. Tr. I. 1 59 I. Sh. I. 3 14 I. Tr. E. 4 16 I. Sh. E.† 5 32 II. Oc. D. 19 50 I. Oc. D. 23 15	17	I. Oc. D. 1 13 II. Ec. R. 3 44 22 I. Ec. R. 4 40 42 I. Tr. I. 22 27 I. Sh. I. 23 39	25	I. Tr. I. 0 26 I. Sh. I. 1 34 I. Tr. E. 2 43 I. Sh. E. 3 52 III. Oc. D. 17 5 II. Tr. I. 20 1 III. Oc. R. 20 10 I. Oc. D. 21 41 III. Ec. D. 21 41 57 II. Sh. I. 22 20 II. Tr. E. 22 44
3	I. Ec. R. 0 50 42 I. Tr. I. 18 31 I. Sh. I. 19 48 I. Tr. E. 20 48 I. Sh. E. 22 5	10	I. Ec. R. 2 45 43 I. Tr. I. 20 28 I. Sh. I. 21 43 I. Tr. E. 22 45 I. Sh. E. 24 1	18	I. Tr. E. 0 44 I. Sh. E. 1 57 III. Oc. D. 12 50 III. Oc. R. 15 54 II. Tr. I. 17 19 III. Ec. D. 17 42 21 I. Oc. D. 19 42 II. Sh. I. 19 45 II. Tr. E. 20 1 III. Ec. R. 20 44 54 II. Sh. E. 22 29 I. Ec. R. 23 9 26	26	III. Ec. R. 0 45 30 II. Sh. E. 1 4 I. Ec. R. 1 4 22 I. Tr. I. 18 56 I. Sh. I. 20 3 I. Tr. E. 21 13 I. Sh. E. 22 21
4	III. Oc. D. 4 30 III. Ec. R.* 7 31 III. Oc. R. 9 42 16 II. Tr. I. 11 58 III. Ec. R. 12 42 48 II. Sh. I. 14 35 II. Tr. E. 14 40 I. Oc. D. 15 47 II. Sh. E. 17 19 I. Ec. R. 19 19 27	11	III. Oc. D.† 8 38 III. Oc. R. 11 41 III. Ec. D. 13 42 7 II. Tr. I. 14 38 III. Ec. R. 16 43 40 II. Sh. I. 17 10 II. Tr. E. 17 20 I. Oc. D. 17 44 II. Sh. E. 19 54 I. Ec. R. 21 14 27	19	I. Tr. I. 16 56 I. Sh. I. 18 7 I. Tr. E. 19 14 I. Sh. E. 20 25 II. Oc. D. 11 56 I. Oc. D. 14 12 II. Ec. R. 17 2 56 I. Ec. R. 17 38 9	27	II. Oc. D. 14 42 I. Oc. D. 16 11 I. Ec. R. 19 33 4 II. Ec. R. 19 41 10
5	I. Tr. I. 13 0 I. Sh. I. 14 16 I. Tr. E. 15 17 I. Sh. E. 16 34	12	I. Tr. I. 14 58 I. Sh. I. 16 12 I. Tr. E. 17 15 I. Sh. E. 18 30	20	I. Tr. I. 18 7 I. Tr. E. 19 14 I. Sh. E. 20 25 II. Oc. D. 11 56 I. Oc. D. 14 12 II. Ec. R. 17 2 56 I. Ec. R. 17 38 9	28	I. Tr. I. 13 26 I. Sh. I. 14 32 I. Tr. E. 15 43 I. Sh. E. 16 50
6	II. Oc. D.* 6 29 I. Oc. D. 10 17 II. Ec. R. 11 46 26 I. Ec. R. 13 48 11	13	II. Oc. D. 9 12 I. Oc. D. 12 14 II. Ec. R. 14 24 41 I. Ec. R. 15 43 11	21	I. Tr. I. 11 26 I. Sh. I. 12 37 I. Tr. E. 13 44 I. Sh. E. 14 55	29	III. Tr. I.† 7 8 II. Tr. I. 9 23 III. Tr. E. 10 14 I. Oc. D. 10 41 III. Sh. I. 11 32 II. Sh. I. 11 37 II. Tr. E. 12 6 I. Ec. R. 14 1 49 II. Sh. E. 14 22 III. Sh. E. 14 45
7	I. Tr. I.* 7 29 I. Sh. I.† 8 45 IV. Oc. D. 8 54 I. Tr. E. 9 47 I. Sh. E. 11 3 IV. Oc. R. 11 5 III. Tr. I. 18 28 IV. Ec. D. 20 29 38 III. Tr. E. 21 29 IV. Ec. R. 23 12 23 III. Sh. I. 23 31	14	I. Tr. I. 9 27 I. Sh. I. 10 41 I. Tr. E. 11 45 I. Sh. E. 12 59 III. Tr. I. 22 38 III. Tr. E. 1 41 III. Sh. I. 3 31 II. Tr. I. 3 58 II. Sh. I.* 6 27 III. Tr. E.* 6 40 III. Sh. E.* 6 42 I. Oc. D.* 6 43 II. Sh. E. 9 12 I. Ec. R. 10 11 57 IV. Tr. I. 18 34 IV. Tr. E. 20 53	22	III. Tr. I. 2 51 III. Tr. E.* 5 56 II. Tr. I.† 6 40 III. Sh. I.† 7 31 I. Oc. D. 8 42 II. Sh. I. 9 2 II. Tr. E. 9 22 III. Sh. E. 10 43 II. Sh. E. 11 47 I. Ec. R. 12 6 54	30	I. Tr. I. 7 56 I. Sh. I. 9 1 I. Tr. E. 10 13 I. Sh. E. 11 19
8	II. Tr. I. 1 18 III. Sh. E. 2 41 II. Sh. I. 3 53 II. Tr. E. 4 0 I. Oc. D. 4 46	15	I. Tr. I. 10 41 I. Tr. E. 11 45 I. Sh. E. 12 59 III. Tr. I. 22 38 III. Tr. E. 1 41 III. Sh. I. 3 31 II. Tr. I. 3 58 II. Sh. I.* 6 27 III. Tr. E.* 6 40 III. Sh. E.* 6 42 I. Oc. D.* 6 43 II. Sh. E. 9 12 I. Ec. R. 10 11 57 IV. Tr. I. 18 34 IV. Tr. E. 20 53	23	I. Tr. I.* 5 56 I. Sh. I.† 7 5 I. Tr. E. 8 13 I. Sh. E. 9 23 II. Oc. D. 1 19 I. Oc. D. 3 11	31	II. Oc. D. 4 6 I. Oc. D.† 5 10 I. Ec. R. 8 30 33 II. Ec. R. 9 0 50
		16	I. Tr. I. 3 57 I. Sh. I. 5 10	24			

MEAN TIME.

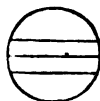
OCTOBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

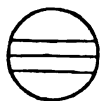
I.

r
*

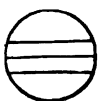
III.

d
* r
*

II.

r
*

IV.

d
* r
*Configurations at 6^h for an inverting Telescope.

Day.	West.		East.	
1	4.	3. 2.	○	·1 ●
2	4.	·3	·2 1.	○
3	·4	·3	○	·1 2
4	·4	·1	○ 2.	·3 ●
5	·4	2.	○	1. ·3
6		·4	·1 ·○ 2	3.
7			·4 ○ 1.	3. 2.
8		3. 2.	○	·4
9		3. ·2 1.	○	·4
10		·3	○	·1 2
11			1. ·3 ○	2.
12		2.	○	1. ·3
13		·1 2	○	3. 4.
14			○	1. 2. 4.
15	○ 2.		3. ·1 ○	4.
16	○ 1.	3. ·2 4.	○	
17		·4	○	·1 2
18	4.	·1 2	○	2.
19	4.	2.	○	1. ·3
20	·4	·1 2	○	3.
21	·4		○	1. ·2 3.
22	·4	·1 2	○	
23	○ 1.	3. ·4	○	
24		·3	○	·4 ● ·2 ● ·1 ●
25		·3 1.	○	2. 4
26		2.	○	·1 3
27		·2 1	○	·3 4
28			○	1. 2 3.
29		·1 3	○	2.
30		3. 2	○	1.
31	·3		○	4. ·2 ● ·1 ●

NOVEMBER.

Day		h m s	Day		h m s	Day		h m s
1	I. Tr. I.	2 26	8	I. Sh. E.	7 43	16	II. Sh. I.	6 4
	I. Sh. I.	3 30		II. Tr. I.	1 30		III. Oc. D.	6 4
	I. Tr. E.	4 43		I. Oc. D.	1 40		I. Ec. R.	6 48 53
	I. Sh. E.*	5 48		III. Oc. D.	1 42		II. Tr. E.	7 0
IV. Tr. I.	14 0			II. Sh. I.	3 29		II. Sh. E.	8 50
IV. Tr. E.	16 34			II. Tr. E.	4 13		III. Oc. R.	9 13
III. Oc. D.	21 22			III. Oc. R.	4 50		III. Ec. D.	9 40 15
II. Tr. I.	22 45			I. Ec. R.	4 54 6		III. Ec. R.	12 46 43
IV. Sh. I.	23 38			III. Ec. D.*	5 40 47	17	I. Tr. I.	0 57
I. Oc. D.	23 40			II. Sh. E.	6 15		I. Sh. I.	1 49
2	III. Oc. R.	0 29		III. Ec. R.	8 46 17		I. Tr. E.	3 15
	II. Sh. I.	0 55		I. Tr. I.	22 56		I. Sh. E.	4 8
	II. Tr. E.	1 28		IV. Oc. D.	23 41		I. Oc. D.	22 10
	III. Ec. D.	1 41 24		I. Sh. I.	23 54		II. Oc. D.	23 7
	IV. Sh. E.	2 42	10	I. Tr. E.	1 14	18	I. Ec. R.	1 17 34
	I. Ec. R.	2 59 15		I. Sh. E.	2 12		II. Ec. R.	3 35 35
	II. Sh. E.	3 40		IV. Oc. R.	2 22		IV. Tr. I.	9 58
	III. Ec. R.	4 45 56		IV. Ec. D.	8 31 50		IV. Tr. E.	12 46
	I. Tr. I.	20 56		IV. Ec. R.	11 35 2		IV. Sh. I.	17 42
	I. Sh. I.	21 58		I. Oc. D.	20 10		I. Tr. I.	19 27
	I. Tr. E.	23 13		II. Oc. D.	20 18		I. Sh. I.	20 18
3	I. Sh. E.	0 17		I. Ec. R.	23 22 47		IV. Sh. E.	20 55
	II. Oc. D.	17 29	11	II. Ec. R.	0 57 31		I. Tr. E.	21 45
	I. Oc. D.	18 10		I. Tr. I.	17 26		I. Sh. E.	22 36
	I. Ec. R.	21 27 57		I. Sh. I.	18 23	19	I. Oc. D.	16 40
	II. Ec. R.	22 19 23		I. Tr. E.	19 44		II. Tr. I.	17 40
4	I. Tr. I.	15 26		I. Sh. E.	20 41		II. Sh. I.	19 22
	I. Sh. I.	16 27	12	I. Oc. D.	14 40		I. Ec. R.	19 46 16
	I. Tr. E.	17 43		II. Tr. I.	14 53		III. Tr. I.	20 13
	I. Sh. E.	18 46		III. Tr. I.	15 50		II. Tr. E.	20 24
5	III. Tr. I.	11 28		II. Sh. I.	16 47		II. Sh. E.	22 7
	II. Tr. I.	12 8		II. Tr. E.	17 36		III. Tr. E.	23 23
	I. Oc. D.	12 40		I. Ec. R.	17 51 30		III. Sh. I.	23 33
	II. Sh. I.	14 12		III. Tr. E.	18 58	20	III. Sh. E.	2 49
	III. Tr. E.	14 35		II. Sh. E.	19 32		I. Tr. I.	13 58
	II. Tr. E.	14 51		III. Sh. I.	19 33		I. Sh. I.	14 47
	III. Sh. I.	15 32		III. Sh. E.	22 48		I. Tr. E.	16 15
	I. Ec. R.	15 56 41	13	I. Tr. I.	11 56		I. Sh. E.	17 5
	II. Sh. E.	16 57		I. Sh. I.	12 52	21	I. Oc. D.	11 11
	III. Sh. E.	18 47		I. Tr. E.	14 14		II. Oc. D.	12 32
6	I. Tr. I.	9 56		I. Sh. E.	15 10		I. Ec. R.	14 14 58
	I. Sh. I.	10 56	14	I. Oc. D.	9 10		II. Ec. R.	16 55 6
	I. Tr. E.	12 13		II. Oc. D.	9 42	22	I. Tr. I.	8 28
	I. Sh. E.	13 14		I. Ec. R.	12 20 13		I. Sh. I.	9 16
7	II. Oc. D.	6 54		II. Ec. R.	14 17 7		I. Tr. E.	10 46
	I. Oc. D.	7 10	15	I. Tr. I.	6 27		I. Sh. E.	11 34
	I. Ec. R.	10 25 24		I. Sh. I.	7 21	23	I. Oc. D.	5 41
	II. Ec. R.	11 39 1		I. Tr. E.	8 45		II. Tr. I.	7 3
				I. Sh. E.	9 39		II. Sh. I.	8 39
8	I. Tr. I.	4 26		I. Oc. D.	3 40		I. Ec. R.	8 43 38
	I. Sh. I.	5 25	16	II. Tr. I.	4 16		II. Tr. E.	9 47
	I. Tr. E.	6 44						

MEAN TIME.

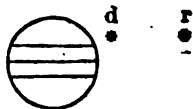
NOVEMBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



III.



II.



IV.



Configurations at 5^h for an inverting Telescope.

Day.	<i>West.</i>			<i>East.</i>		
1		·3	1·	○	4·	2·
2			4· 2·	○	3·	
3		4·	·2 1·	○		·3
4		4·		○	1· 2	3·
5		4·		·1	○	3· 2·
6		·4		·2	○	1·
7		·4	·3	·1	○	
8	○ 1·	·4	·3	○		2·
9			·4	2·	○ ·3 ·1	
10			·2	1·	○ ·4	·3
11					○	·2 ·1 ·4 3·
12				·1	○	·2 ·4
13				2· 3·	○	1·
14			3·	·2	○	·4
15			·3		○ 1·	·2 4·
16	○ 2·			·3	○	4· ·1 ●
17			·2	1·	○	·3 4·
18					○	·2 ·1 3·
19				4· 1·	○	·2
20			4·	2· 3·	○	1·
21			4· 3·	·2	○	
22			·4	·3	○	1· ·2
23			·4		·3 ·1	○ 2·
24	○ 1·	·4	·2		○	·3
25			·4		○	·1 3·
26				·4 1·	○	2· 3·
27				2· 3·	○	1·
28			3·	·2 ·1	○	·4
29			·3		○	1· ·2 ·4
30				·3 ·1	○	2·

MEAN TIME.

DECEMBER.

Day.		h m s	Day.		h m s	Day.		h m s	Day.		h m s
1	I. Tr. I. †	5 0	5	IV. Tr. I.	6 19	9	I. Oc. D. †	4 13	12	I. Oc. D.	17 14
	I. Sh. I. †	5 40		IV. Tr. E.	9 22		I. Ec. R.	7 137		I. Ec. R.	19 58 56
	I. Tr. E.	7 18		IV. Sh. I.	11 46		II. Oc. D.	7 39		II. Oc. D.	21 5
	I. Sh. E.	7 58		IV. Sh. E.	15 8		II. Ec. R.	11 29 1	13	II. Ec. R.	0 48 16
2	I. Oc. D.	2 12		I. Oc. D.	15 13	10	I. Tr. I.	1 32		I. Tr. I.	14 33
	II. Oc. D. †	4 48		I. Ec. R.	18 4 20		I. Sh. I.	2 4		I. Sh. I.	15 1
	I. Ec. R. †	5 6 59		II. Oc. D.	18 14		I. Tr. E. †	3 50		IV. Oc. D.	16 18
	II. Ec. R.	8 51 21		II. Ec. R.	22 10 42		I. Sh. E. †	4 22		I. Tr. E.	16 51
	I. Tr. I.	23 30	6	I. Tr. I.	12 31		I. Oc. D.	22 44		I. Sh. E.	17 20
3	I. Sh. I.	0 9		I. Sh. I.	13 6	11	I. Ec. R.	1 30 15		IV. Oc. R.	19 28
	I. Tr. E.	1 48		I. Tr. E.	14 49		II. Tr. I.	2 4		IV. Ec. D.	20 34 15
	I. Sh. E.	2 27		I. Sh. E.	15 25		II. Sh. I.	3 6		IV. Ec. R.	23 55 7
	I. Oc. D.	20 42		I. Oc. D.	9 43		II. Tr. E. †	4 49	14	I. Oc. D.	11 45
	II. Tr. I.	23 15	7	I. Ec. R.	12 32 58		II. Sh. E.	5 53		I. Ec. R.	14 27 33
	I. Ec. R.	23 35 39		II. Tr. I.	12 40		III. Tr. I.	9 32		II. Tr. I.	15 29
4	II. Sh. I.	0 31		II. Sh. I.	13 49		III. Sh. I.	11 32		II. Sh. I.	16 24
	II. Tr. E.	2 0		II. Tr. E.	15 24		III. Tr. E.	12 46		II. Tr. E.	18 24
	II. Sh. E.	3 18		II. Sh. E.	16 35		III. Sh. E.	14 51		II. Sh. E.	19 10
	III. Tr. I. †	5 4		III. Oc. D.	19 20		I. Tr. I.	20 3		III. Oc. D.	23 48
	III. Sh. I.	7 32	8	III. Ec. R.	0 49 10		I. Sh. I.	20 33	15	III. Ec. R. †	4 49 23
	III. Tr. E.	8 17		I. Tr. I.	7 2		I. Tr. E.	22 22		I. Tr. I.	9 4
	III. Sh. E.	10 50		I. Sh. I.	7 35		I. Sh. E.	22 51		I. Sh. I.	9 30
	I. Tr. I.	18 1		I. Tr. E.	9 20					I. Tr. E.	11 22
	I. Sh. I.	18 37		I. Sh. E.	9 54					I. Sh. E.	11 49
	I. Tr. E.	20 19									
	I. Sh. E.	20 56									

THE SATELLITES OF JUPITER

ARE INVISIBLE FROM DECEMBER 15 UNTIL DECEMBER 31,

JUPITER BEING TOO NEAR TO THE SUN,

MEAN TIME.

DECEMBER.

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.



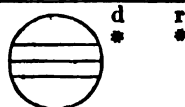
III.



II.



IV.



Configurations at 5^h for an inverting Telescope.

Day.	West.	East.
1	○ 1. 2.	○ 3. 4. ✓
2		○ 3. 4. 2. 1. ●
3	1. ○	2. 3. 4.
4	2. 3. ○	1. 4.
5	3. 2. 1. 4. ○	
6	3. 4.	○ 1.
7	4. 3. 1. ○	2.
8	4. 2. ○	1. 3.
9	4. 2. ○	3. 1. ●
10	4. 1. ○	2. 3.
11	4. 2. ○	3. 1.
12	4. 2. 1. ○	
13	3. 4. ○	2. 1.
14	3. 1. ○	4. 2.
15	2. ○	3. 1. 4.

MEAN TIME.

		h		o			
Jan.	1	—	☉ eclipsed, invis. at Green ^b .				
	1	14	☿ ☉ (— — — — ☿	2	34	S.	
	2	1	♀ ☉ ☉ — — — — ♀	0	40	S.	
	4	10	♂ ☉ ☉ — — — — ♂	2	4	N.	
	4	12	♀ ☉ ☉ — — — — ♀	1	33	N.	
	9	19	☿ greatest Hel. Lat. S.				
	11	9	☿ ☉ ☉				
	16	—	☉ eclipsed, part. vis. at Green ^b .				
	18	9	♂ ☉ ☉ — — — — ♂	1	20	S.	
	25	12	☿ Stationary.				
	27	21	♂ ☉ ☉ — — — — ♂	1	42	S.	
	28	19	☿ in ☿				
	30	2	♀ at greatest elong. 18 20 E.				
	30	21	☿ in ☿				
Feb.	1	3	☿ ☉ ☉ — — — — ☿	4	24	N.	
	2	10	☿ in Perihelion.				
	2	11	♂ ☉ ☉ — — — — ♂	3	57	N.	
	3	8	♀ ☉ ☉ — — — — ♀	5	37	N.	
	5	0	☿ ☉ ☉				
	5	0	☿ Stationary.				
	8	4	☿ Stationary.				
	12	17	☿ greatest Hel. Lat. N.				
	14	13	☿ Inf. ☉ ☉				
	14	13	♂ ☉ ☉ — — — — ♂	1	5	S.	
	17	11	☿ ☉ ☉				
	17	16	♀ at greatest elong. 46 35 E.				
	24	13	♂ ☉ ☉ — — — — ♂	1	11	S.	
	26	17	☿ Stationary.				
	27	14	☿ ☉ ☉ — — — — ☿	4	18	N.	
Mar.	3	12	♂ ☉ ☉ — — — — ♂	5	2	N.	
	4	23	♀ ☉ ☉ — — — — ♀	8	57	N.	
	5	8	☿ in Perihelion.				
	8	4	☿ in ☿				
	12	23	☿ at greatest elong. 27 35 W.				
	13	18	♂ ☉ ☉ — — — — ♂	1	0	S.	
	18	9	☿ in Aphelion.				
	19	22	☉ enters ♈, Spring comm ^a .				
	24	0	♂ ☉ ☉ — — — — ♂	0	41	S.	
	25	—	☿ at greatest brilliancy.				
	27	0	♂ ☉ ☉				
	27	9	♀ greatest Hel. Lat. N.				
	29	0	☿ ☉ ☉ — — — — ☿	2	2	N.	
Apr.	1	14	♂ ☉ ☉ — — — — ♂	5	7	N.	
	2	17	♀ ☉ ☉ — — — — ♀	11	7	N.	
	5	12	♂ in ☿				
Apr.	7	18	☿ greatest Hel. Lat. S.				
	9	1	☿ Stationary.				
	9	5	☿ ☉ ☉				
	10	1	♂ ☉ ☉ — — — — ♂	1	9	S.	
	14	2	♂ Stationary.				
	20	8	♂ ☉ ☉ — — — — ♂	0	19	S.	
	24	11	♂ Stationary.				
	24	19	☿ Sup. ☉ ☉				
	26	18	☿ in ☿				
	29	11	♀ ☉ ☉ — — — — ♀	10	15	N.	
	30	0	☿ ☉ ☉ — — — — ☿	5	8	N.	
	30	14	☿ Inf. ☉ ☉				
	30	15	♂ ☉ ☉ — — — — ♂	4	21	N.	
May	1	9	☿ in Perihelion.				
	3	13	☿ ☉ ☉				
	5	5	☿ ☉ ☉ — — — — ☿	1	9	N.	
	7	10	♂ ☉ ☉ — — — — ♂	1	28	S.	
	11	16	☿ greatest Hel. Lat. N.				
	12	7	♂ ☉ ☉ — — — — ♂	2	2	N.	
	17	15	♂ ☉ ☉ — — — — ♂	0	15	S.	
	20	0	☿ Stationary.				
	22	10	☿ in ☿				
	22	15	☿ ☉ ☉				
	24	7	☿ at greatest elong. 22 44 E.				
	26	4	♀ ☉ ☉ — — — — ♀	4	30	N.	
	29	16	♂ ☉ ☉ — — — — ♂	3	3	N.	
	31	4	♀ ☉ ☉ — — — — ♀	1	53	N.	
June	3	20	♂ ☉ ☉ — — — — ♂	1	47	S.	
	4	3	☿ in ☿				
	6	—	☿ at greatest brilliancy.				
	6	8	☿ Stationary.				
	13	21	♂ ☉ ☉ — — — — ♂	0	29	S.	
	14	8	☿ in Aphelion.				
	17	14	☿ ☉ ☉				
	18	23	☿ Inf. ☉ ☉				
	20	18	☉ enters ♋, Summer comm ^a .				
	23	18	♀ ☉ ☉ — — — — ♀	1	0	N.	
	24	7	♂ ☉ ☉				
	25	7	☿ Stationary.				
	25	19	☿ in Aphelion.				
	26	20	☿ ☉ ☉ — — — — ☿	3	4	S.	
	27	15	♂ ☉ ☉ — — — — ♂	1	32	N.	
	27	—	☉ eclipsed, invis. at Green ^b .				
	30	13	☿ Stationary.				

MEAN TIME.

July	1	7	h	♂	♄	- - - -	h	2	3	S.
	1	9	⊙	in Apogee.						
	4	18	♀	greatest Hel. Lat. S.						
	9	13	♄	□	⊙					
	9	20	♀	at greatest elong. 45 38 W.						
	10	16	♀	♂	♂	- - - -	♀	1	48	S.
	11	2	♂	♄	- - - -	♂	0	52	S.	
	11	22	♀	at greatest elong. 20 37 W.						
	12	-	♄	eclipsed, part. vis. at Green ^h .						
	18	7	♀	greatest Hel. Lat. S.						
	23	9	♀	♄	- - - -	♀	0	41	S.	
	23	18	♀	in ♄						
	26	8	♀	♄	- - - -	♀	0	19	S.	
	26	11	♂	♄	- - - -	♂	0	1	S.	
	27	17	♀	♄	- - - -	♀	0	14	S.	
	28	8	♀	in Perihelion.						
	28	19	♂	♄	- - - -	♂	2	16	S.	
Aug.	7	8	♀	Sup. ♂ ⊙						
	7	8	♂	♄	- - - -	♂	1	6	S.	
	7	15	♀	greatest Hel. Lat. N.						
	11	2	♀	♄	- - - -	♀	0	38	N.	
	16	2	♂	♄	- - - -	♂	-			
	22	10	♀	♄	- - - -	♀	1	59	S.	
	24	6	♂	♄	- - - -	♂	1	29	S.	
	24	17	♂	Stationary.						
	25	8	♂	♄	- - - -	♂	2	28	S.	
	27	5	♂	□	⊙					
	27	10	♀	♄	- - - -	♀	4	42	S.	
	31	2	♀	in ♄						
Sept.	3	14	♂	♄	- - - -	♂	1	2	S.	
	4	6	♂	in ♄						
	6	20	♂	Stationary.						
	10	7	♀	in Aphelion.						
	12	14	♀	in ♄						
	19	20	♂	♄	- - - -	♂	0	1	N.	
	20	11	♀	at greatest elong. 26 11 E.						
	21	14	♀	♄	- - - -	♀	3	12	S.	
	21	22	♂	♄	- - - -	♂	2	44	S.	
	22	0	♂	♄	- - - -	♂	-			
	22	1	♂	♄	- - - -	♂	2	47	S.	
	22	9	⊙	enters ♄, Autumn comm ^a .						
	25	20	♀	♄	- - - -	♀	0	34	S.	
	26	9	♀	♄	- - - -	♀	8	38	S.	
	30	17	♀	greatest Hel. Lat. S.						
	30	23	♂	♄	- - - -	♂	0	39	S.	
Oct.	1	1	♀	♄	- - - -	♀	0	22	S.	
	3	13	♀	Stationary.						
	7	12	♂	greatest Hel. Lat. N.						
	15	2	♄	♄	- - - -	♄	-			
	15	5	♀	♄	- - - -	♀	2	15	S.	
	15	12	♀	Inf. ♂ ⊙						
	16	1	♀	in Perihelion.						
	19	13	♂	♄	- - - -	♂	3	1	S.	
	19	17	♀	in ♄						
	20	18	♂	♄	- - - -	♂	3	43	S.	
	21	18	♀	♄	- - - -	♀	3	48	S.	
	22	22	♀	♄	- - - -	♀	4	22	S.	
	23	23	♀	Stationary.						
	24	7	♀	in Perihelion.						
	28	11	♂	♄	- - - -	♂	0	7	S.	
	31	4	♀	at greatest elong. 18 36 W.						
Nov.	2	21	♀	♄	- - - -	♀	1	45	N.	
	3	14	♀	greatest Hel. Lat. N.						
	7	2	♀	greatest Hel. Lat. N.						
	9	7	♀	♄	- - - -	♀	1	8	N.	
	11	19	♂	in Aphelion.						
	16	1	♂	♄	- - - -	♂	3	15	S.	
	18	12	♂	♄	- - - -	♂	4	8	S.	
	20	22	♀	♄	- - - -	♀	3	2	S.	
	21	21	♀	♄	- - - -	♀	3	2	S.	
	24	18	♂	♄	- - - -	♂	0	27	N.	
	25	4	♂	♄	- - - -	♂	-			
	27	2	♀	in ♄						
Dec.	7	7	♀	in Aphelion.						
	7	12	♀	Sup. ♂ ⊙						
	13	10	♂	♄	- - - -	♂	3	18	S.	
	14	19	♂	Stationary.						
	17	4	♂	♄	- - - -	♂	3	54	S.	
	21	1	♀	♄	- - - -	♀	1	6	S.	
	21	3	⊙	enters ♄, Winter comm ^a .						
	22	-	⊙	eclipsed, invis. at Green ^h .						
	22	16	♀	♄	- - - -	♀	1	26	S.	
	23	0	♂	♄	- - - -	♂	1	0	N.	
	24	0	♂	♄	- - - -	♂	0	55	N.	
	26	14	♀	♄	- - - -	♀	2	0	S.	
	27	16	♀	greatest Hel. Lat. S.						

ELEMENTS FOR DETERMINING THE GEOCENTRIC POSITION,
MAGNITUDE, AND APPEARANCE OF SATURN'S RING.

Mean Noon.	p	a'	b'	a''	b''	l	l'
1888.							
Dec. 18	$-6^{\circ} 55' 8''$	$43^{\circ} 99'$	$-10^{\circ} 43'$	$29^{\circ} 26'$	$-6^{\circ} 93'$	$-13^{\circ} 42' 8''$	$-15^{\circ} 43' 4''$
1889.							
Jan. 7	$6^{\circ} 58' 5''$	$45^{\circ} 17'$	$11^{\circ} 07'$	$30^{\circ} 04'$	$7^{\circ} 36'$	$14^{\circ} 10' 8''$	$15^{\circ} 27' 0''$
— 27	$7^{\circ} 2' 5''$	$45^{\circ} 81'$	$11^{\circ} 73'$	$30^{\circ} 46'$	$7^{\circ} 80'$	$14^{\circ} 50' 6''$	$15^{\circ} 10' 5''$
Feb. 16	$7^{\circ} 6' 7''$	$45^{\circ} 77'$	$12^{\circ} 27'$	$30^{\circ} 44'$	$8^{\circ} 16'$	$15^{\circ} 33' 0''$	$14^{\circ} 53' 9''$
Mar. 8	$7^{\circ} 10' 1''$	$45^{\circ} 06'$	$12^{\circ} 53'$	$29^{\circ} 96'$	$8^{\circ} 33'$	$16^{\circ} 8' 7''$	$14^{\circ} 37' 2''$
— 28	$7^{\circ} 12' 2''$	$43^{\circ} 85'$	$12^{\circ} 47'$	$29^{\circ} 16'$	$8^{\circ} 29'$	$16^{\circ} 31' 2''$	$14^{\circ} 20' 4''$
April 17	$7^{\circ} 12' 7''$	$42^{\circ} 37'$	$12^{\circ} 11'$	$28^{\circ} 17'$	$8^{\circ} 06'$	$16^{\circ} 36' 8''$	$14^{\circ} 3' 4''$
May 7	$7^{\circ} 11' 6''$	$40^{\circ} 85'$	$11^{\circ} 54'$	$27^{\circ} 16'$	$7^{\circ} 68'$	$16^{\circ} 24' 9''$	$13^{\circ} 46' 4''$
— 27	$7^{\circ} 9' 0''$	$39^{\circ} 46'$	$10^{\circ} 84'$	$26^{\circ} 24'$	$7^{\circ} 21'$	$15^{\circ} 56' 7''$	$13^{\circ} 29' 3''$
June 16	$7^{\circ} 4' 9''$	$38^{\circ} 30'$	$10^{\circ} 07'$	$25^{\circ} 47'$	$6^{\circ} 70'$	$15^{\circ} 14' 6''$	$13^{\circ} 12' 1''$
July 6	$6^{\circ} 59' 3''$	$37^{\circ} 44'$	$9^{\circ} 28'$	$24^{\circ} 90'$	$6^{\circ} 17'$	$14^{\circ} 21' 6''$	$12^{\circ} 54' 8''$
— 26	$6^{\circ} 52' 6''$	$36^{\circ} 91'$	$8^{\circ} 52'$	$24^{\circ} 54'$	$5^{\circ} 67'$	$13^{\circ} 20' 9''$	$12^{\circ} 37' 4''$
Aug. 15	$6^{\circ} 44' 8''$	$36^{\circ} 71'$	$7^{\circ} 80'$	$24^{\circ} 41'$	$5^{\circ} 18'$	$12^{\circ} 15' 8''$	$12^{\circ} 19' 9''$
Sept. 4	$6^{\circ} 36' 6''$	$36^{\circ} 86'$	$7^{\circ} 14'$	$24^{\circ} 51'$	$4^{\circ} 75'$	$11^{\circ} 10' 1''$	$12^{\circ} 2' 4''$
— 24	$6^{\circ} 28' 3''$	$37^{\circ} 36'$	$6^{\circ} 57'$	$24^{\circ} 85'$	$4^{\circ} 37'$	$10^{\circ} 7' 6''$	$11^{\circ} 44' 8''$
Oct. 14	$6^{\circ} 20' 6''$	$38^{\circ} 29'$	$6^{\circ} 12'$	$25^{\circ} 40'$	$4^{\circ} 07'$	$9^{\circ} 12' 8''$	$11^{\circ} 27' 1''$
Nov. 3	$6^{\circ} 14' 3''$	$39^{\circ} 34'$	$5^{\circ} 82'$	$26^{\circ} 16'$	$3^{\circ} 87'$	$8^{\circ} 30' 1''$	$11^{\circ} 9' 3''$
— 23	$6^{\circ} 10' 0''$	$40^{\circ} 71'$	$5^{\circ} 71'$	$27^{\circ} 08'$	$3^{\circ} 80'$	$8^{\circ} 3' 8''$	$10^{\circ} 51' 5''$
Dec. 13	$6^{\circ} 8' 4''$	$42^{\circ} 21'$	$5^{\circ} 84'$	$28^{\circ} 07'$	$3^{\circ} 88'$	$7^{\circ} 56' 8''$	$10^{\circ} 33' 6''$
— 33	$-6^{\circ} 9' 7''$	$43^{\circ} 64'$	$-6^{\circ} 20'$	$29^{\circ} 02'$	$-4^{\circ} 12'$	$-8^{\circ} 10' 2''$	$-10^{\circ} 15' 6''$

p denotes the inclination of the Northern semi-minor axes of the Rings to the circle of Declination ; + East, — West.

a' the apparent outer *major* axis of the outer Ring.

b' ————— outer *minor* axis of the outer Ring; + North surface visible,
— South surface visible.

a'' ————— inner *major* axis of the inner Ring.

b'' ————— inner *minor* axis of the inner Ring.

l the elevation of the Earth above the plane of the Ring, as seen from Saturn;
+ North, — South.

l' the elevation of the Sun above the plane of the Ring, as seen from Saturn;
+ North, — South.

ILLUMINATED PORTION OF THE DISCS OF VENUS AND MARS.

1889.	VENUS.	MARS.	1889.	VENUS.	MARS.	1889.	VENUS.	MARS.
Jan. 15	0.665	0.948	May 15	0.068	0.997	Sept. 15	0.775	0.980
Feb. 14	0.535	0.965	June 15	0.338	1.000	Oct. 15	0.859	0.964
Mar. 15	0.355	0.979	July 15	0.525	0.998	Nov. 15	0.924	0.944
Apr. 15	0.079	0.990	Aug. 15	0.666	0.991	Dec. 15	0.966	0.924

The numbers in this Table are the versed sines of the illuminated portion of the Discs, the apparent diameters of the planets being taken as unity.

MOON'S EQUATOR.												Moon's		Motion of	
Mean Noon.		Inclination to the Earth's Equator.			Ascending Node on the Earth's Equator to Ascending Node on Ecliptic.			Ascending Node on the Earth's Equator.			Mean Longitude.		Mean Longitude.		
		i			Δ			Ω'			l ₀				
		°	'	diff.	°	'	diff.	°	'	diff.	°	'	Days.		
Jan.	1	24	3' 8	—0' 7	295	2' 8	—30' 9	356	30' 1	—0' 9	274	2' 1	1	13	10' 6
	11	24	3' 1	0' 8	294	31' 9	31' 0	356	29' 2	0' 9	45	47' 9			
	21	24	2' 3	0' 7	294	0' 9	31' 0	356	28' 3	0' 8	177	33' 7			
	31	24	1' 6	0' 8	293	29' 9	31' 0	356	27' 5	0' 8	309	19' 6			
Feb.	10	24	0' 8	0' 8	292	58' 9	31' 0	356	26' 7	0' 8	81	5' 4	5	65	52' 9
	20	24	0' 0	0' 8	292	27' 9	31' 1	356	25' 9	0' 8	212	51' 3			
Mar.	2	23	59' 2	0' 8	291	56' 8	31' 1	356	25' 1	0' 8	344	37' 1	7	92	14' 1
	12	23	58' 4	0' 8	291	25' 7	31' 1	356	24' 3	0' 7	116	22' 9			
Apr.	22	23	57' 6	0' 8	290	54' 6	31' 1	356	23' 6	0' 8	248	8' 8	10	131	45' 8
	1	23	56' 8	0' 8	290	23' 5	31' 1	356	22' 8	0' 7	19	54' 6			
	11	23	56' 0	0' 8	289	52' 4	31' 1	356	22' 1	0' 7	151	40' 4			
	21	23	55' 2	0' 8	289	21' 3	31' 1	356	21' 4	0' 7	283	26' 3			
May	1	23	54' 4	0' 8	288	50' 2	31' 2	356	20' 7	0' 6	55	12' 1	3	1	38' 8
	11	23	53' 6	0' 8	288	19' 0	31' 2	356	20' 1	0' 6	186	58' 0			
	21	23	52' 8	0' 8	287	47' 9	31' 2	356	19' 4	0' 6	318	43' 8			
	31	23	52' 0	0' 8	287	16' 7	31' 2	356	18' 8	0' 6	90	29' 6			
June	10	23	51' 2	0' 9	286	45' 5	31' 2	356	18' 2	0' 6	222	15' 5	7	4	23' 5
	20	23	50' 3	0' 8	286	14' 3	31' 3	356	17' 6	0' 6	354	1' 3			
	30	23	49' 5	0' 8	285	43' 0	31' 2	356	17' 0	0' 6	125	47' 1			
July	10	23	48' 7	0' 8	285	11' 8	31' 3	356	16' 4	0' 5	257	33' 0	11	6	35' 3
	20	23	47' 9	0' 8	284	40' 5	31' 3	356	15' 9	0' 6	29	18' 8			
	30	23	47' 1	0' 9	284	9' 2	31' 3	356	15' 3	0' 5	161	4' 7			
Aug.	9	23	46' 2	0' 8	283	37' 9	31' 3	356	14' 8	0' 5	292	50' 5	15	8	14' 1
	19	23	45' 4	0' 8	283	6' 6	31' 3	356	14' 3	0' 4	64	36' 3			
	29	23	44' 6	0' 8	282	35' 3	31' 4	356	13' 9	0' 5	196	22' 2			
Sept.	8	23	43' 8	0' 9	282	3' 9	31' 3	356	13' 4	0' 4	328	8' 0	19	10	25' 9
	18	23	42' 9	0' 8	281	32' 6	31' 4	356	13' 0	0' 4	99	53' 8			
	28	23	42' 1	0' 8	281	1' 2	31' 4	356	12' 6	0' 4	231	39' 7			
Oct.	8	23	41' 3	0' 9	280	29' 8	31' 4	356	12' 2	0' 4	3	25' 5	23	12	37' 6
	18	23	40' 4	0' 8	279	58' 4	31' 4	356	11' 8	0' 4	135	11' 4			
	28	23	39' 6	0' 8	279	27' 0	31' 4	356	11' 4	0' 3	266	57' 2			
Nov.	7	23	38' 8	0' 9	278	55' 6	31' 5	356	11' 1	0' 3	38	43' 0	10	0	5' 5
	17	23	37' 9	0' 8	278	24' 1	31' 5	356	10' 8	0' 3	170	28' 9			
	27	23	37' 1	0' 9	277	52' 6	31' 5	356	10' 5	0' 3	302	14' 7			
Dec.	7	23	36' 2	0' 8	277	21' 1	31' 5	356	10' 2	0' 3	74	0' 5	40	0	22' 0
	17	23	35' 4	0' 9	276	49' 6	31' 6	356	9' 9	0' 2	205	46' 4			
	27	23	34' 5	—0' 8	276	18' 0	—31' 6	356	9' 7	—0' 2	337	32' 2			
	37	23	33' 7		275	46' 4		356	9' 5		109	18' 1	100		0 54' 9

Minutes.

MEAN TIME OF HIGH WATER AT LONDON BRIDGE.

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	h	m	h	m	h	m	h	m	h	m	h	m
1	1	14	13	41	2	52	15	14	2	52	15	56
2	2	7	14	33	3	36	15	56	3	29	15	46
3	2	59	15	24	4	17	16	38	4	2	16	19
4	3	46	16	10	4	56	17	14	4	34	16	49
5	4	34	16	57	5	32	17	50	5	6	17	25
6	5	19	17	41	6	10	18	29	5	45	18	7
7	6	3	18	26	6	49	19	11	6	30	18	57
8	6	49	19	13	7	33	19	58	7	28	20	3
9	7	37	20	4	8	28	21	2	8	41	21	22
10	8	33	21	4	9	43	22	24	10	2	22	38
11	9	40	22	14	11	4	23	41	11	9	23	37
12	10	49	23	22	—	12	13	—	—	12	3	—
13	11	52	—	—	0	41	13	5	0	26	12	49
14	0	19	12	45	1	28	13	48	1	11	13	32
15	1	7	13	29	2	9	14	27	1	53	14	14
16	1	50	14	8	2	44	15	1	2	36	14	59
17	2	25	14	42	3	18	15	36	3	22	15	45
18	3	0	15	18	3	52	16	11	4	10	16	35
19	3	35	15	53	4	29	16	49	4	59	17	24
20	4	12	16	30	5	8	17	28	5	51	18	20
21	4	48	17	6	5	46	18	8	6	50	19	23
22	5	25	17	46	6	31	18	54	7	59	20	35
23	6	9	18	32	7	21	19	51	9	12	21	50
24	6	56	19	21	8	27	21	7	10	25	22	58
25	7	50	20	20	9	51	22	37	11	29	23	56
26	8	54	21	32	11	23	—	—	—	12	21	—
27	10	14	22	53	0	3	12	37	0	42	13	2
28	11	31	—	—	1	6	13	32	1	22	13	41
29	0	8	12	41	—	—	—	—	2	0	14	17
30	1	9	13	36	—	—	—	—	2	34	14	49
31	2	3	14	28	—	—	—	—	3	5	15	23

If the time of High Water be required, according to the *civil* mode of reckoning:

1. *For the Morning Tide* :—With the day of the month *preceding* the given date, take the time opposite thereto from the 2nd column of the month, and diminish it by 12 hours.

2. *For the Afternoon Tide* :—With the given date, take the time opposite thereto from the 1st column of the month.

MEAN TIME OF HIGH WATER AT LONDON BRIDGE.

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	h	m	h	m	h	m	h	m	h	m	h	m
1	3	57	16	16	4	50	17	8	5	40	18	2
2	4	35	16	52	5	27	17	47	6	26	18	52
3	5	11	17	31	6	9	18	32	7	21	19	52
4	5	51	18	14	6	55	19	21	8	29	21	13
5	6	37	19	2	7	49	20	20	9	59	22	43
6	7	28	19	56	8	54	21	32	11	25	—	—
7	8	26	20	59	10	10	22	49	0	2	12	34
8	9	32	22	6	11	30	—	—	1	1	13	28
9	10	38	23	11	0	7	12	37	1	52	14	13
10	11	45	—	—	1	6	13	35	2	34	14	54
11	0	16	12	44	2	2	14	26	3	14	15	32
12	1	12	13	40	2	50	15	12	3	51	16	10
13	2	7	14	33	3	34	15	56	4	28	16	45
14	3	0	15	26	4	18	16	39	5	1	17	18
15	3	50	16	14	4	59	17	18	5	35	17	53
16	4	39	17	3	5	37	17	56	6	13	18	34
17	5	26	17	48	6	16	18	37	6	58	19	25
18	6	11	18	34	6	58	19	21	7	57	20	35
19	6	57	19	21	7	46	20	15	9	19	22	6
20	7	47	20	13	8	48	21	27	10	48	23	25
21	8	41	21	12	10	9	22	48	11	58	—	—
22	9	48	22	23	11	24	23	58	0	26	12	47
23	10	56	23	28	—	—	12	28	1	6	13	26
24	11	58	—	—	0	51	13	14	1	45	14	2
25	0	26	12	51	1	34	13	54	2	18	14	34
26	1	14	13	35	2	11	14	28	2	51	15	7
27	1	54	14	14	2	45	15	1	3	25	15	44
28	2	31	14	48	3	17	15	35	4	2	16	20
29	3	6	15	23	3	52	16	10	4	38	16	58
30	3	40	15	58	4	28	16	46	5	18	17	40
31	4	16	16	34	5	3	17	21	—	—	—	—

Example :—Required the Mean Time of High Water at London Bridge, for the Morning and Afternoon of July 14, 1889.

1. Opposite the day *preceding*, viz. 13, and in the 2nd column, under JULY, is 14^h 33^m, which, being diminished by 12^h, gives 2^h 33^m, for the Time of High Water in the Morning.

2. Opposite the given date, and in the 1st column, under JULY, is 3^h 0^m, which is the Time of High Water in the Afternoon.

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE FOLLOWING PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.		PLACE.	SITUATION.	Time of High Water.	
		h	m			h	m
Aberdeen	Scotland	1	0	Chausey Islands	France	6	9
Aberdovey	Wales	8	0	Cherbourg	France	7	49
Aberystwith	Wales	7	31	Chichester	England	11	30
Achill-beg	Ireland	5	14	Christchurch	England	9	0
Agnes (St.)	Scilly Isles	4	30	Clear Cape	Ireland	4	0
Aldborough	England	10	45	Coquet Road	England	3	0
Alderney	English Channel	6	46	Cordouan	France	3	37
Amlwch Port	Anglesea	10	30	Cork, Penrose Quay	Ireland	4	58
Antwerp	Belgium	4	25	Cornwall Cape	England	4	35
Arklow	Ireland	8	0	Cowes, West	Isle of Wight	10	45
Arundel Bar	England	11	35	Cromarty	Scotland	11	56
Ayr Point	Isle of Man	11	7	Cromer	England	7	0
Ballyshannon Bar	Ireland	5	18	Cuxhaven	Germany	0	49
Balta	Shetland	9	45	Dartmouth	England	6	16
Baltimore	Ireland	4	23	Deal	England	11	15
Banff	Scotland	0	28	Dee River (Chester)	England	0	16
Bantry Harbour	Ireland	3	47	Devonport Dock Yard	England	5	43
Bardsey Island	Wales	7	40	Dielette	France	6	40
Barmouth	Wales	7	41	Dieppe	France	11	6
Barnstaple Bridge	England	6	28	Dingle	Ireland	3	51
Beachy Head	England	11	20	Donaghadee	Ireland	11	13
Beaumaris	Wales	10	28	Donegal Harbour	Ireland	5	18
Belfast	Ireland	10	43	Douglas Harbour	Isle of Man	11	12
Berwick	England	2	18	Dover	England	11	12
Blakeney Bar	England	6	30	Downs	England	11	15
Blyth	England	3	15	Dublin Bar	Ireland	11	12
Bolt Head	England	5	45	Dunbar	Scotland	2	8
Bordeaux	France	6	50	Duncansby Ness	Scotland	10	14
Boston	England	7	0	Dundalk	Ireland	10	56
Boulogne	France	11	25	Dundee	Scotland	2	32
Bréhat	France	5	51	Dungarvan	Ireland	5	12
Brest	France	3	47	Dungeness	England	10	45
Bridgewater Bar	England	6	50	Dunkerque	France	0	8
Bridlington	England	4	39	Elbe River (Ent.)	Germany	Noon	
Bridport	England	6	5	Exmouth	England	6	21
Brielle	Netherlands	3	0	Eyemouth	Scotland	2	15
Brighton	England	11	15	Falmouth	England	4	57
Bristol	England	7	13	Fécamp	France	10	44
Brouwershaven	Netherlands	2	0	Flamboro' Head	England	4	30
Burntisland	Scotland	2	24	Flatholm	Bristol Chan.	6	54
Calais	France	11	49	Flushing	Belgium	0	54
Caldy Road	Bris. Ch., Wales	5	40	Fowey	England	5	14
Calf of Man	St. Geo. Channel	11	17	Galloway (Mull)	Scotland	11	15
Cantyre (Mull)	Scotland	10	35	Galway	Ireland	4	35
Cardigan	Wales	7	1	Gibraltar (New Mole)	Spain	1	47
Cardiff	Wales	6	56	Glasgow	Scotland	1	8
Carlingford Bar	Ireland	11	0	Glenan Islands	France	3	12
Carmarthen Bar	Wales	5	44	Goeree Gat.	Netherlands	2	0
Carnarvon	Wales	9	27	Granville	France	6	13
Chatham	England	1	11	Gravelines	France	Noon	

TIME OF HIGH WATER, ON THE FULL AND CHANGE OF THE MOON,
AT THE FOLLOWING PORTS AND PLACES.

PLACE.	SITUATION.	Time of High Water.	PLACE.	SITUATION.	Time of High Water.
		h m			h m
Gravesend - - -	England - - -	1 10	Peterhead - - -	Scotland - - -	0 34
Greenock - - -	Scotland - - -	0 8	Piel - - - - -	England - - -	11 5
Grimby - - -	England - - -	5 36	Plymouth (Breakwtr.)	England - - -	5 37
Guernsey Pier - -	English Channel	6 37	Portland (Breakwater)	England - - -	7 1
Gunfleet Sand - -	River Thames	11 40	Port Patrick - - -	Scotland - - -	11 10
Hartlepool - - -	England - - -	3 28	Portsmouth Dock Yd.	England - - -	11 41
Harwich - - -	England - - -	0 6	Ramsgate Harbour -	England - - -	11 44
Hastings - - -	England - - -	10 53	Rotterdam - - -	Netherlands -	3 45
Håvre - - -	France - - -	9 18	Rye Bay - - - -	England - - -	11 20
Heligoland - - -	German Ocean	11 33	Salcombe - - - -	England - - -	5 41
Hellevoetsluis -	Netherlands -	2 30	Saltees - - - -	Ireland - - -	5 40
Hollesley - - -	England - - -	11 30	Scalloway - - - -	Shetland - - -	9 30
Holyhead - - -	Wales - - -	10 11	Scarborough - - -	England - - -	4 11
Holy Island - - -	England - - -	2 30	Scilly Islands (St. Mary)	England - - -	4 27
Honfleur - - -	France - - -	9 29	Selsea Bill - - -	England - - -	11 45
Horn Reefs - - -	Jutland - - -	Noon	Shannon Mouth - -	Ireland - - -	4 16
Howth Harbour -	Ireland - - -	11 9	Sheephaven - - -	Ireland - - -	5 32
Hull - - - - -	England - - -	6 29	Sheerness - - - -	England - - -	0 37
Humber River Ent.	England - - -	5 26	Shields (North) -	England - - -	3 23
Ile-de-Bas - - -	France - - -	4 49	Shoreham Harbour -	England - - -	11 34
Ipswich - - - -	England - - -	0 35	Skerries - - - -	N. C. of Irel.	6 45
Jersey (St. Helier)	English Channel	6 29	Sligo Bay, Mullaghmore	Ireland - - -	5 18
Kenmare River -	Ireland - - -	3 52	Southampton - - -	England - - -	10 30
Kingstown - - -	Ireland - - -	11 12	Southwold - - - -	England - - -	10 20
Kinsale - - - -	Ireland - - -	4 43	Spithead - - - -	England - - -	11 20
Kirkcudbright -	Scotland - - -	11 10	Spurn Point - - -	England - - -	5 26
La Hougue Harb.	France - - -	8 42	St. Ives - - - -	England - - -	4 44
Land's End - - -	England - - -	4 30	St. Malo - - - -	France - - -	6 5
Leith - - - - -	Scotland - - -	2 17	Stornoway - - - -	Hebrides - - -	6 46
Lerwick - - - -	Shetland - - -	10 30	Stromness - - - -	Orkneys - - -	9 0
Limerick - - - -	Ireland - - -	6 10	Sunderland - - - -	England - - -	3 22
Lisbon (Belem) -	Portugal - - -	2 30	Swansea Bay - - -	Wales - - -	6 1
Liverpool - - -	England - - -	11 23	Tay Bar - - - - -	Scotland - - -	2 6
London Bridge -	River Thames	1 58	Tees River Bar - -	England - - -	3 45
Margate - - - -	England - - -	11 45	Terschelling, West -	Netherlands -	8 40
Milford Haven Ent.	Wales - - -	5 56	Texel Bar - - - -	Netherlands -	6 0
Minehead - - - -	England - - -	6 24	Torbay - - - - -	England - - -	6 0
Montrose - - - -	Scotland - - -	1 25	Tralee Bay - - - -	Ireland - - -	4 3
Morlaix Road - -	France - - -	4 53	Tynemouth Bar - -	England - - -	3 20
Needles Point - -	Isle of Wight -	9 46	Wangeroog - - - -	Germany - - -	11 19
Newcastle - - -	England - - -	3 46	Waterford Bridge -	Ireland - - -	6 6
Newhaven - - - -	England - - -	11 51	Wexford - - - - -	Ireland - - -	7 21
Newport - - - -	Wales - - -	7 10	Weymouth - - - -	England - - -	7 2
Nieuport - - - -	Belgium - - -	0 18	Whitby - - - - -	England - - -	3 45
Nore Light - - -	River Thames	0 30	Wick - - - - -	Scotland - - -	11 22
Orfordness - - -	England - - -	11 15	Wicklow - - - - -	Ireland - - -	10 29
Ostende - - - -	Belgium - - -	0 25	Wisbeach - - - -	England - - -	7 30
Pembroke Dock Yd.	Wales - - -	6 12	Yarmouth Roads -	England - - -	9 15
Penzance - - - -	England - - -	4 30	Youghal - - - - -	Ireland - - -	5 14

$\Delta\lambda$, $\frac{1}{2}$, and B' ; USED IN COMPUTING THE MOON'S LIBRATION.Argument*: $\lambda - \varnothing$.

$\lambda - \varnothing$	$\Delta\lambda$	$\frac{1}{2}$	B'	$\lambda - \varnothing$	$\Delta\lambda$	$\frac{1}{2}$	B'
0	+	0.0	+	0	+	0.6	+
1	0.0	37	0	1	0.6	53	+
2	0.0	37	0	2	0.6	54	+
3	0.1	37	0	3	0.6	55	+
4	0.1	37	0	4	0.6	56	+
5	0.1	37	0	5	0.6	57	+
6	0.1	38	0	6	0.6	58	+
7	0.1	38	0	7	0.6	59	+
8	0.2	38	0	8	0.6	61	+
9	0.2	38	0	9	0.6	62	+
10	0.2	38	0	10	0.6	63	+
11	0.2	38	0	11	0.6	65	+
12	0.2	38	0	12	0.6	67	+
13	0.3	38	0	13	0.6	69	+
14	0.3	38	0	14	0.6	71	+
15	0.3	39	0	15	0.5	73	+
16	0.3	39	0	16	0.5	75	+
17	0.3	39	0	17	0.5	77	+
18	0.3	39	0	18	0.5	79	+
19	0.4	39	0	19	0.5	82	+
20	0.4	40	0	20	0.5	85	+
21	0.4	40	0	21	0.5	88	+
22	0.4	40	0	22	0.5	92	+
23	0.4	41	0	23	0.4	96	+
24	0.5	41	0	24	0.4	100	+
25	0.5	41	0	25	0.4	104	+
26	0.5	41	0	26	0.4	109	+
27	0.5	42	0	27	0.4	115	+
28	0.5	42	0	28	0.4	121	+
29	0.5	43	0	29	0.3	128	+
30	0.5	43	0	30	0.3	135	+
31	0.5	43	0	31	0.3	144	+
32	0.6	44	0	32	0.3	154	+
33	0.6	44	0	33	0.3	166	+
34	0.6	45	0	34	0.3	180	+
35	0.6	45	0	35	0.2	196	+
36	0.6	46	0	36	0.2	215	+
37	0.6	46	0	37	0.2	239	+
38	0.6	47	0	38	0.2	268	+
39	0.6	47	0	39	0.1	306	+
40	0.6	48	0	40	0.1	357	+
41	0.6	49	0	41	0.1	428	+
42	0.6	49	1	42	0.1	535	+
43	0.6	50	1	43	0.1	713	+
44	0.6	51	1	44	0.0	1069	+
45	0.6	52	1	45	0.0	2138	+
46	+	53	+	46	+	00	+
47	0.0	53	+	47	0.0	00	+
48	0.0	53	+	48	0.0	00	+
49	0.0	53	+	49	0.0	00	+
50	0.0	53	+	50	0.0	00	+
51	0.0	53	+	51	0.0	00	+
52	0.0	53	+	52	0.0	00	+
53	0.0	53	+	53	0.0	00	+
54	0.0	53	+	54	0.0	00	+
55	0.0	53	+	55	0.0	00	+
56	0.0	53	+	56	0.0	00	+
57	0.0	53	+	57	0.0	00	+
58	0.0	53	+	58	0.0	00	+
59	0.0	53	+	59	0.0	00	+
60	0.0	53	+	60	0.0	00	+
61	0.0	53	+	61	0.0	00	+
62	0.0	53	+	62	0.0	00	+
63	0.0	53	+	63	0.0	00	+
64	0.0	53	+	64	0.0	00	+
65	0.0	53	+	65	0.0	00	+
66	0.0	53	+	66	0.0	00	+
67	0.0	53	+	67	0.0	00	+
68	0.0	53	+	68	0.0	00	+
69	0.0	53	+	69	0.0	00	+
70	0.0	53	+	70	0.0	00	+
71	0.0	53	+	71	0.0	00	+
72	0.0	53	+	72	0.0	00	+
73	0.0	53	+	73	0.0	00	+
74	0.0	53	+	74	0.0	00	+
75	0.0	53	+	75	0.0	00	+
76	0.0	53	+	76	0.0	00	+
77	0.0	53	+	77	0.0	00	+
78	0.0	53	+	78	0.0	00	+
79	0.0	53	+	79	0.0	00	+
80	0.0	53	+	80	0.0	00	+
81	0.0	53	+	81	0.0	00	+
82	0.0	53	+	82	0.0	00	+
83	0.0	53	+	83	0.0	00	+
84	0.0	53	+	84	0.0	00	+
85	0.0	53	+	85	0.0	00	+
86	0.0	53	+	86	0.0	00	+
87	0.0	53	+	87	0.0	00	+
88	0.0	53	+	88	0.0	00	+
89	0.0	53	+	89	0.0	00	+
90	+	53	+	90	+	00	+

* When $\lambda - \varnothing$ exceeds 180° , take the excess for the Argument, and change the signs of $\frac{1}{2}$ and B' .

$\Delta\lambda$, $\frac{1}{2}$, and B' ; USED IN COMPUTING THE MOON'S LIBRATION.Argument*: $\lambda - \varpi$.

$\lambda - \varpi$	$\Delta\lambda$	$\frac{1}{2}$	B'	$\lambda - \varpi$	$\Delta\lambda$	$\frac{1}{2}$	B'
			diff.				diff.
90	0° 0'	∞	+1 32° 1'	135	- 0° 6'	- 53	+1 5° 2'
91	0° 0'	-2138	1 32° 1'	136	0° 6'	52	1 4° 1'
92	0° 0'	1069	1 32° 1'	137	0° 6'	51	1 2° 9'
93	0° 1'	713	1 32° 0'	138	0° 6'	50	1 1° 7'
94	0° 1'	535	1 31° 9'	139	0° 6'	49	1 0° 5'
95	0° 1'	428	1 31° 8'	140	0° 6'	49	0 59° 2'
96	0° 1'	357	1 31° 6'	141	0° 6'	48	0 58° 0'
97	0° 1'	306	1 31° 5'	142	0° 6'	47	0 56° 8'
98	0° 2'	268	1 31° 3'	143	0° 6'	47	0 55° 5'
99	0° 2'	239	1 31° 0'	144	0° 6'	46	0 54° 2'
100	0° 2'	215	1 30° 8'	145	0° 6'	46	0 52° 9'
101	0° 2'	196	1 30° 5'	146	0° 6'	45	0 51° 6'
102	0° 3'	180	1 30° 1'	147	0° 6'	45	0 50° 2'
103	0° 3'	166	1 29° 8'	148	0° 6'	44	0 48° 9'
104	0° 3'	154	1 29° 4'	149	0° 5'	44	0 47° 5'
105	0° 3'	144	1 29° 0'	150	0° 5'	43	0 46° 1'
106	0° 3'	135	1 28° 6'	151	0° 5'	43	0 44° 7'
107	0° 3'	128	1 28° 1'	152	0° 5'	42	0 43° 3'
108	0° 4'	121	1 27° 7'	153	0° 5'	42	0 41° 9'
109	0° 4'	115	1 27° 2'	154	0° 5'	41	0 40° 5'
110	0° 4'	109	1 26° 6'	155	0° 5'	41	0 39° 0'
111	0° 4'	104	1 26° 0'	156	0° 5'	41	0 37° 5'
112	0° 4'	100	1 25° 4'	157	0° 4'	41	0 36° 0'
113	0° 4'	96	1 24° 8'	158	0° 4'	40	0 34° 5'
114	0° 5'	92	1 24° 2'	159	0° 4'	40	0 33° 0'
115	0° 5'	88	1 23° 5'	160	0° 4'	40	0 31° 5'
116	0° 5'	85	1 22° 8'	161	0° 4'	39	0 30° 0'
117	0° 5'	82	1 22° 1'	162	0° 3'	39	0 28° 5'
118	0° 5'	79	1 21° 4'	163	0° 3'	39	0 27° 0'
119	0° 5'	77	1 20° 6'	164	0° 3'	39	0 25° 4'
120	0° 5'	75	1 19° 8'	165	0° 3'	39	0 23° 9'
121	0° 5'	73	1 19° 0'	166	0° 3'	38	0 22° 3'
122	0° 6'	71	1 18° 2'	167	0° 3'	38	0 20° 7'
123	0° 6'	69	1 17° 3'	168	0° 2'	38	0 19° 2'
124	0° 6'	67	1 16° 4'	169	0° 2'	38	0 17° 6'
125	0° 6'	65	1 15° 5'	170	0° 2'	38	0 16° 0'
126	0° 6'	63	1 14° 6'	171	0° 2'	38	0 14° 4'
127	0° 6'	62	1 13° 6'	172	0° 2'	38	0 12° 8'
128	0° 6'	61	1 12° 6'	173	0° 1'	38	0 11° 2'
129	0° 6'	59	1 11° 6'	174	0° 1'	38	0 9° 6'
130	0° 6'	58	1 10° 6'	175	0° 1'	37	0 8° 0'
131	0° 6'	57	1 9° 6'	176	0° 1'	37	0 6° 4'
132	0° 6'	56	1 8° 5'	177	0° 1'	37	0 4° 8'
133	0° 6'	55	1 7° 4'	178	0° 0'	37	0 3° 2'
134	0° 6'	54	1 6° 3'	179	0° 0'	37	0 1° 6'
135	- 0° 6'	- 53	+1 5° 2'	180	- 0° 0'	- 37	+0 0° 0'

* When $\lambda - \varpi$ exceeds 180° , take the excess for the Argument, and change the signs of $\frac{1}{2}$, and B' .

**THE CORRECTION FOR SECOND DIFFERENCES, IN
FINDING THE GREENWICH TIME CORRESPONDING TO A
REDUCED LUNAR DISTANCE.**

Arguments:—Interval and Mean difference of Proportional Logarithms.

Interval.		Mean difference of the Proportional Logarithms in the Ephemeris.																											
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52		
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	10	2	50	0	0	0	1	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	
0	20	2	40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	
0	30	2	30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	9	9	
0	40	2	20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	11	11	
0	50	2	10	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	
1	0	2	0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	14	14	
1	10	1	50	1	1	2	2	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	15	15	15	
1	20	1	40	1	1	2	3	3	4	4	5	6	7	7	8	9	9	10	10	11	12	12	13	14	15	15	16	16	
1	30	1	30	1	1	2	3	3	4	4	5	6	7	8	8	9	9	10	11	11	12	12	13	14	15	16	16	16	

		Mean difference of the Proportional Logarithms in the Ephemeris.																									
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	2	50	4	4	4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7	7	7
0	20	2	40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	13
0	30	2	30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	15	15	16	16	16	17	17	17	18
0	40	2	20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	20	20	21	21	22	22
0	50	2	10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	23	23	24	24	25	26
1	0	2	0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	28	28
1	10	1	50	16	17	17	18	18	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30	30
1	20	1	40	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31	31
1	30	1	30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	32

		Mean difference of the Proportional Logarithms in the Ephemeris.																	
		104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h	m	h	m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	10	2	50	7	7	7	7	7	7	8	8	8	8	8	8	8	9	9	9
0	20	2	40	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	17
0	30	2	30	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	24
0	40	2	20	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29
0	50	2	10	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	34
1	0	2	0	29	29	30	30	31	31	32	33	33	34	34	35	36	37	37	38
1	10	1	50	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40
1	20	1	40	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41
1	30	1	30	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42

The Correction is to be *added* to the approximate Greenwich Time when the Proportional Logarithms in the Ephemeris are *decreasing*, and *subtracted* when they are *increasing*.

USED IN DETERMINING THE LATITUDE BY OBSERVATIONS
OF THE POLE STAR OUT OF THE MERIDIAN.

TABLE I.

Containing the *First* Correction.*Argument*:—Sidereal Time of Observation.

Sidereal Time.	Correction.	Sidereal Time.	Sidereal Time.	Correction.	Sidereal Time.
h m	° ' " +	h m	h m	° ' " +	h m
0 0	— 1 12 35 +	12 0	6 0	— 0 25 42 +	18 0
10	1 13 38	10	10	0 22 31	10
20	1 14 33	20	20	0 19 17	20
30	1 15 19	30	30	0 16 1	30
40	1 15 57	40	40	0 12 43	40
50	1 16 26	50	50	0 9 23	50
1 0	1 16 46	13 0	7 0	0 6 2	19 0
10	1 16 57	10	10	— 0 2 41 +	10
20	1 17 0	20	20	+ 0 0 40 —	20
30	1 16 54	30	30	0 4 2	30
40	1 16 39	40	40	0 7 23	40
50	1 16 15	50	50	0 10 43	50
2 0	1 15 43	14 0	8 0	0 14 2	20 0
10	1 15 2	10	10	0 17 19	10
20	1 14 12	20	20	0 20 35	20
30	1 13 14	30	30	0 23 48	30
40	1 12 7	40	40	0 26 58	40
50	1 10 53	50	50	0 30 5	50
3 0	1 9 30	15 0	9 0	0 33 9	21 0
10	1 7 59	10	10	0 36 7 9	10
20	1 6 21	20	20	0 39 4 5	20
30	1 4 35	30	30	0 41 56	30
40	1 2 41	40	40	0 44 43	40
50	1 0 41	50	50	0 47 24	50
4 0	0 58 33	16 0	10 0	0 50 0	22 0
10	0 56 19	10	10	0 52 31	10
20	0 53 58	20	20	0 54 55	20
30	0 51 31	30	30	0 57 13	30
40	0 48 59	40	40	0 59 25	40
50	0 46 21	50	50	1 1 30	50
5 0	0 43 37	17 0	11 0	1 3 27	23 0
10	0 40 48	10	10	1 5 18	10
20	0 37 55	20	20	1 7 1	20
30	0 34 57	30	30	1 8 36	30
40	0 31 56	40	40	1 10 4	40
50	0 28 51	50	50	1 11 24	50
6 0	— 0 25 42 +	18 0	12 0	+ 1 12 35 —	24 0

TABLES.

TABLE II.

Containing the *Second* Correction. (*always to be added.*)*Arguments:—Sidereal Time and Altitude.*

Sidereal Time.	Altitude.								Sidereal Time.
	° 0	° 5	° 10	° 15	° 20	° 25	° 30	° 35	
h m	' "	' "	' "	' "	' "	' "	' "	' "	h m
0 0	0 0	0 1	0 1	0 2	0 2	0 3	0 3	0 4	12 0
0 30	0 0	0 0	0 0	0 1	0 1	0 1	0 1	0 2	12 30
1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13 0
1 30	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	13 30
2 0	0 0	0 0	0 0	0 0	0 1	0 1	0 1	0 1	14 0
2 30	0 0	0 0	0 1	0 1	0 2	0 2	0 3	0 4	14 30
3 0	0 0	0 1	0 2	0 3	0 4	0 4	0 6	0 7	15 0
3 30	0 0	0 1	0 3	0 4	0 6	0 7	0 9	0 11	15 30
4 0	0 0	0 2	0 4	0 6	0 8	0 10	0 13	0 15	16 0
4 30	0 0	0 2	0 5	0 8	0 10	0 13	0 17	0 20	16 30
5 0	0 0	0 3	0 6	0 9	0 13	0 16	0 20	0 25	17 0
5 30	0 0	0 4	0 7	0 11	0 15	0 19	0 24	0 29	17 30
6 0	0 0	0 4	0 8	0 12	0 17	0 21	0 27	0 32	18 0
6 30	0 0	0 4	0 9	0 13	0 18	0 23	0 29	0 35	18 30
7 0	0 0	0 4	0 9	0 14	0 19	0 24	0 30	0 36	19 0
7 30	0 0	0 4	0 9	0 14	0 19	0 24	0 30	0 36	19 30
8 0	0 0	0 4	0 9	0 13	0 18	0 23	0 29	0 35	20 0
8 30	0 0	0 4	0 8	0 13	0 17	0 22	0 27	0 33	20 30
9 0	0 0	0 4	0 7	0 11	0 15	0 20	0 24	0 30	21 0
9 30	0 0	0 3	0 6	0 10	0 13	0 17	0 21	0 26	21 30
10 0	0 0	0 3	0 5	0 8	0 11	0 14	0 17	0 21	22 0
10 30	0 0	0 2	0 4	0 6	0 8	0 11	0 13	0 16	22 30
11 0	0 0	0 1	0 3	0 4	0 6	0 8	0 10	0 12	23 0
11 30	0 0	0 1	0 2	0 3	0 4	0 5	0 6	0 7	23 30
12 0	0 0	0 1	0 1	0 2	0 2	0 3	0 3	0 4	24 0

TABLE III. (*for 1889.*)Containing the *Third* Correction. (*always to be added.*)*Arguments:—Sidereal Time and Date.*

Sidereal Time.	Jan. 1.	Feb. 1.	March 1.	April 1.	May 1.	June 1.	July 1.
h	' "	' "	' "	' "	' "	' "	' "
0	1 14	1 11	1 4	0 54	0 46	0 42	0 44
2	1 11	1 13	1 10	1 2	0 52	0 45	0 42
4	1 5	1 12	1 14	1 9	1 1	0 52	0 45
6	0 58	1 8	1 13	1 14	1 9	1 1	0 52
8	0 51	1 2	1 10	1 15	1 15	1 10	1 1
10	0 47	0 55	1 4	1 12	1 17	1 16	1 10
12	0 46	0 49	0 56	1 6	1 14	1 18	1 16
14	0 49	0 47	0 50	0 58	1 8	1 15	1 18
16	0 55	0 48	0 46	0 51	0 59	1 8	1 15
18	1 2	0 52	0 47	0 46	0 51	0 59	1 8
20	1 9	0 58	0 50	0 45	0 45	0 50	0 59
22	1 13	1 5	0 56	0 48	0 43	0 44	0 50
24	1 14	1 11	1 4	0 54	0 46	0 42	0 44

TABLE II.

Containing the *Second* Correction. (*always to be added.*)*Arguments:—Sidereal Time and Altitude.*

Sidereal Time.	Altitude.								Sidereal Time.
	35°	40°	45°	50°	55°	60°	65°	70°	
h m	' "	' "	' "	' "	' "	' "	' "	' "	h m
0 0	0 4	0 5	0 6	0 7	0 8	0 10	0 12	0 16	12 0
0 30	0 2	0 2	0 2	0 3	0 3	0 4	0 5	0 6	13 30
1 0	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 1	13 0
1 30	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	14 30
2 0	0 1	0 1	0 2	0 2	0 2	0 3	0 4	0 5	14 0
2 30	0 4	0 4	0 5	0 6	0 7	0 9	0 11	0 14	15 30
3 0	0 7	0 8	0 10	0 11	0 14	0 17	0 21	0 26	15 0
3 30	0 11	0 13	0 15	0 18	0 22	0 27	0 33	0 42	16 30
4 0	0 15	0 18	0 22	0 26	0 31	0 38	0 47	1 0	16 0
4 30	0 20	0 24	0 29	0 34	0 41	0 49	1 1	1 19	17 30
5 0	0 25	0 29	0 35	0 42	0 50	1 1	1 15	1 37	17 0
5 30	0 29	0 34	0 41	0 49	0 59	1 11	1 28	1 53	18 30
6 0	0 32	0 39	0 46	0 55	1 6	1 20	1 38	2 6	18 0
6 30	0 35	0 42	0 50	0 59	1 11	1 26	1 46	2 16	19 30
7 0	0 36	0 43	0 52	1 1	1 14	1 29	1 50	2 21	19 0
7 30	0 36	0 43	0 52	1 1	1 14	1 29	1 50	2 22	20 30
8 0	0 35	0 42	0 50	1 0	1 12	1 27	1 47	2 18	20 0
8 30	0 33	0 39	0 47	0 56	1 7	1 21	1 40	2 9	21 30
9 0	0 30	0 35	0 42	0 50	1 0	1 13	1 30	1 56	21 0
9 30	0 26	0 31	0 36	0 43	0 52	1 3	1 18	1 40	22 30
10 0	0 21	0 25	0 30	0 36	0 43	0 52	1 4	1 22	22 0
10 30	0 16	0 19	0 23	0 28	0 33	0 40	0 50	1 4	23 30
11 0	0 12	0 14	0 17	0 20	0 24	0 29	0 36	0 45	23 0
11 30	0 7	0 9	0 11	0 13	0 15	0 19	0 23	0 29	24 30
12 0	0 4	0 5	0 6	0 7	0 8	0 10	0 12	0 16	24 0

TABLE III. (*for 1889.*)Containing the *Third* Correction. (*always to be added.*)*Arguments:—Sidereal Time and Date.*

Sidereal Time.	July 1.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 1.	Dec. 1.	-Dec. 31.
h	' "	' "	' "	' "	' "	' "	' "
0	0 44	0 50	1 0	1 12	1 23	1 31	1 34
2	0 42	0 43	0 50	0 59	1 11	1 22	1 29
4	0 45	0 41	0 42	0 47	0 56	1 7	1 17
6	0 52	0 44	0 39	0 38	0 42	0 50	1 0
8	1 1	0 51	0 42	0 35	0 33	0 36	0 43
10	1 10	1 0	0 49	0 39	0 31	0 28	0 31
12	1 16	1 10	1 0	0 48	0 37	0 29	0 26
14	1 18	1 17	1 10	1 1	0 49	0 38	0 31
16	1 15	1 19	1 18	1 13	1 4	0 53	0 43
18	1 8	1 16	1 21	1 22	1 18	1 10	1 0
20	0 59	1 9	1 18	1 25	1 27	1 24	1 17
22	0 50	1 0	1 11	1 21	1 29	1 32	1 29
24	0 44	0 50	1 0	1 12	1 23	1 31	1 34

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS
of SIDEREAL Time.

HOURS.			MINUTES.			SECONDS.		
Hours of Mean Time.	Equivalents in Sidereal Time.		Minutes of Mean Time.	Equivalents in Sidereal Time.		Seconds of Mean Time.	Equivalents in Sidereal Time.	
	h	m		m	s		s	
1	1	0	9	8	565	1	1	0
2	2	0	19	7	130	2	2	0
3	3	0	29	5	694	3	3	0
4	4	0	39	4	259	4	4	0
5	5	0	49	2	824	5	5	0
6	6	0	59	1	388	6	6	0
7	7	1	8	9	953	7	7	1
8	8	1	18	8	518	8	8	1
9	9	1	28	7	083	9	9	1
10	10	1	38	5	647	10	10	1
11	11	1	48	4	212	11	11	1
12	12	1	58	2	777	12	12	1
13	13	2	8	1	342	13	13	2
14	14	2	17	9	906	14	14	2
15	15	2	27	8	471	15	15	2
16	16	2	37	7	036	16	16	2
17	17	2	47	5	600	17	17	2
18	18	2	57	4	165	18	18	2
19	19	3	7	2	730	19	19	3
20	20	3	17	1	295	20	20	3
21	21	3	26	9	859	21	21	3
22	22	3	36	8	424	22	22	3
23	23	3	46	6	989	23	23	3
24	24	3	56	5	554	24	24	3
25	25	4	1	0	69	25	25	4
26	26	4	2	7	11	26	26	4
27	27	4	3	4	354	27	27	4
28	28	4	5	9	97	28	28	4
29	29	4	7	6	40	29	29	4
30	30	4	9	2	82	30	30	4
31	31	5	0	9	25	31	31	5
32	32	5	2	5	68	32	32	5
33	33	5	4	2	11	33	33	5
34	34	5	5	5	53	34	34	5
35	35	5	7	4	96	35	35	5
36	36	5	9	1	39	36	36	5
37	37	6	0	7	82	37	37	6
38	38	6	2	4	24	38	38	6
39	39	6	4	0	67	39	39	6
40	40	6	5	7	10	40	40	6
41	41	6	7	3	53	41	41	6
42	42	6	8	9	95	42	42	6
43	43	7	0	6	38	43	43	7
44	44	7	2	2	81	44	44	7
45	45	7	3	9	24	45	45	7
46	46	7	5	5	66	46	46	7
47	47	7	7	2	09	47	47	7
48	48	7	8	8	52	48	48	7
49	49	8	0	4	95	49	49	8
50	50	8	2	1	37	50	50	8
51	51	8	3	7	80	51	51	8
52	52	8	5	4	23	52	52	8
53	53	8	7	0	66	53	53	8
54	54	8	8	7	08	54	54	8
55	55	9	0	3	51	55	55	9
56	56	9	1	9	94	56	56	9
57	57	9	3	6	37	57	57	9
58	58	9	5	2	79	58	58	9
59	59	9	6	9	22	59	59	9
60	60	9	8	5	65	60	60	9
61	61	10	0	0	08	61	61	10
62	62	10	1	0	11	62	62	10
63	63	10	2	0	14	63	63	10
64	64	10	3	0	17	64	64	10
65	65	10	4	0	20	65	65	10
66	66	10	5	0	23	66	66	10
67	67	10	6	0	26	67	67	10
68	68	10	7	0	29	68	68	10
69	69	10	8	0	32	69	69	10
70	70	10	9	0	35	70	70	10
71	71	11	0	0	38	71	71	11
72	72	11	1	0	41	72	72	11
73	73	11	2	0	44	73	73	11
74	74	11	3	0	47	74	74	11
75	75	11	4	0	50	75	75	11
76	76	11	5	0	53	76	76	11
77	77	11	6	0	56	77	77	11
78	78	11	7	0	59	78	78	11
79	79	11	8	0	62	79	79	11
80	80	11	9	0	65	80	80	11
81	81	12	0	0	68	81	81	12
82	82	12	1	0	71	82	82	12
83	83	12	2	0	74	83	83	12
84	84	12	3	0	77	84	84	12
85	85	12	4	0	80	85	85	12
86	86	12	5	0	83	86	86	12
87	87	12	6	0	86	87	87	12
88	88	12	7	0	89	88	88	12
89	89	12	8	0	92	89	89	12
90	90	12	9	0	95	90	90	12
91	91	13	0	0	98	91	91	13
92	92	13	1	0	101	92	92	13
93	93	13	2	0	104	93	93	13
94	94	13	3	0	107	94	94	13
95	95	13	4	0	110	95	95	13
96	96	13	5	0	113	96	96	13
97	97	13	6	0	116	97	97	13
98	98	13	7	0	119	98	98	13
99	99	13	8	0	122	99	99	13
100	100	13	9	0	125	100	100	13

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of SIDEREAL Time.

FRACTIONS OF A SECOND.

Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.
0.01	0.01003	0.21	0.21057	0.41	0.41112	0.61	0.61167	0.81	0.81222
0.02	0.02006	0.22	0.22060	0.42	0.42115	0.62	0.62170	0.82	0.82225
0.03	0.03008	0.23	0.23063	0.43	0.43118	0.63	0.63173	0.83	0.83227
0.04	0.04011	0.24	0.24066	0.44	0.44120	0.64	0.64175	0.84	0.84230
0.05	0.05014	0.25	0.25068	0.45	0.45123	0.65	0.65178	0.85	0.85233
0.06	0.06016	0.26	0.26071	0.46	0.46126	0.66	0.66181	0.86	0.86235
0.07	0.07019	0.27	0.27074	0.47	0.47129	0.67	0.67183	0.87	0.87238
0.08	0.08022	0.28	0.28077	0.48	0.48131	0.68	0.68186	0.88	0.88241
0.09	0.09025	0.29	0.29079	0.49	0.49134	0.69	0.69189	0.89	0.89244
0.10	0.10027	0.30	0.30082	0.50	0.50137	0.70	0.70192	0.90	0.90246
0.11	0.11030	0.31	0.31085	0.51	0.51140	0.71	0.71194	0.91	0.91249
0.12	0.12033	0.32	0.32088	0.52	0.52142	0.72	0.72197	0.92	0.92252
0.13	0.13036	0.33	0.33090	0.53	0.53145	0.73	0.73200	0.93	0.93255
0.14	0.14038	0.34	0.34093	0.54	0.54148	0.74	0.74203	0.94	0.94257
0.15	0.15041	0.35	0.35096	0.55	0.55151	0.75	0.75205	0.95	0.95260
0.16	0.16044	0.36	0.36099	0.56	0.56153	0.76	0.76208	0.96	0.96263
0.17	0.17047	0.37	0.37101	0.57	0.57156	0.77	0.77211	0.97	0.97266
0.18	0.18049	0.38	0.38104	0.58	0.58159	0.78	0.78214	0.98	0.98268
0.19	0.19052	0.39	0.39107	0.59	0.59162	0.79	0.79216	0.99	0.99271
0.20	0.20055	0.40	0.40110	0.60	0.60164	0.80	0.80219	1.00	1.00274

Sidereal Time required = Sidereal Time at the *preceding* Mean Noon + the Equivalent to the given Mean Time.

EXAMPLE.—To convert 2^h 22^m 25^s.62 Mean Time at Greenwich, Jan. 21, 1889, into Sidereal Time.

Sidereal Time at the <i>preceding</i> Mean Noon, viz. January 21 -----				h	m	s
				20	4	9.73
For Mean Intervals.	{	^{2^h} 0 ^m 0 ^s 22 0 25 0.62	{	The Table gives the Equivalent		
				Sidereal Intervals,		
				2	0	19.713
				22	3	614
		25	0	69		
				0	622	

The Sum is the Sidereal Time required - - 22 26 58.75

TABLES.

For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of MEAN SOLAR Time.

HOURS.			MINUTES.			SECONDS.		
Hours of Sidereal Time.	Equivalents in Mean Time.		Minutes of Sidereal Time.	Equivalents in Mean Time.		Seconds of Sidereal Time.	Equivalents in Mean Time.	
	h	m	s		m	s		s
1	0	59	50	1	0	59	50	1704
2	1	59	40	2	1	59	40	3409
3	2	59	30	3	2	59	30	5113
4	3	59	20	4	3	59	20	6818
5	4	59	10	5	4	59	10	8522
6	5	59	1	6	5	59	01	0226
7	6	58	51	7	6	58	51	1931
8	7	58	41	8	7	58	41	3635
9	8	58	31	9	8	58	31	5340
10	9	58	21	10	9	58	21	7044
11	10	58	11	11	10	58	11	8748
12	11	58	2	12	11	58	03	0453
13	12	57	52	13	12	57	52	2157
14	13	57	42	14	13	57	42	3862
15	14	57	32	15	14	57	32	5566
16	15	57	22	16	15	57	22	7270
17	16	57	12	17	16	57	12	8975
18	17	57	3	18	17	57	05	0679
19	18	56	53	19	18	56	53	2384
20	19	56	43	20	19	56	43	4088
21	20	56	33	21	20	56	33	5792
22	21	56	23	22	21	56	23	7497
23	22	56	13	23	22	56	13	9201
24	23	56	4	24	23	56	04	0906
				25	24	55	50	9044
				26	25	55	40	5740
				27	26	55	30	5767
				28	27	55	20	4129
				29	28	55	10	2490
				30	29	55	00	0852
				31	30	54	50	9214
				32	31	54	40	7576
				33	32	54	30	5937
				34	33	54	20	4299
				35	34	54	10	2661
				36	35	54	00	1023
				37	36	53	50	9384
				38	37	53	40	7746
				39	38	53	30	6108
				40	39	53	20	4470
				41	40	53	10	2831
				42	41	53	00	1193
				43	42	52	50	9555
				44	43	52	40	7917
				45	44	52	30	6278
				46	45	52	20	4640
				47	46	52	10	3002
				48	47	52	00	1364
				49	48	51	50	9725
				50	49	51	40	8087
				51	50	51	30	6449
				52	51	51	20	4810
				53	52	51	10	3172
				54	53	51	00	1534
				55	54	50	50	9896
				56	55	50	40	8257
				57	56	50	30	6619
				58	57	50	20	4981
				59	58	50	10	3343
				60	59	50	00	1704
				25	24	55	50	9818
				26	25	55	40	9290
				27	26	55	30	9263
				28	27	55	20	9236
				29	28	55	10	9208
				30	29	55	00	9181
				55	54	50	50	8499
				56	55	50	40	8471
				57	56	50	30	8444
				58	57	50	20	8417
				59	58	50	10	8389
				60	59	50	00	8362

For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of
MEAN SOLAR Time.

FRACTIONS OF A SECOND.

Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.
0.01	0.00997	0.21	0.20943	0.41	0.40888	0.61	0.60833	0.81	0.80779
0.02	0.01995	0.22	0.21940	0.42	0.41885	0.62	0.61831	0.82	0.81776
0.03	0.02992	0.23	0.22937	0.43	0.42883	0.63	0.62828	0.83	0.82773
0.04	0.03989	0.24	0.23934	0.44	0.43880	0.64	0.63825	0.84	0.83771
0.05	0.04986	0.25	0.24932	0.45	0.44877	0.65	0.64823	0.85	0.84768
0.06	0.05984	0.26	0.25929	0.46	0.45874	0.66	0.65820	0.86	0.85765
0.07	0.06981	0.27	0.26926	0.47	0.46872	0.67	0.66817	0.87	0.86762
0.08	0.07978	0.28	0.27924	0.48	0.47869	0.68	0.67814	0.88	0.87760
0.09	0.08975	0.29	0.28921	0.49	0.48866	0.69	0.68812	0.89	0.88757
0.10	0.09973	0.30	0.29918	0.50	0.49864	0.70	0.69809	0.90	0.89754
0.11	0.10970	0.31	0.30915	0.51	0.50861	0.71	0.70806	0.91	0.90752
0.12	0.11967	0.32	0.31913	0.52	0.51858	0.72	0.71803	0.92	0.91749
0.13	0.12965	0.33	0.32910	0.53	0.52855	0.73	0.72801	0.93	0.92746
0.14	0.13962	0.34	0.33907	0.54	0.53853	0.74	0.73798	0.94	0.93743
0.15	0.14959	0.35	0.34904	0.55	0.54850	0.75	0.74795	0.95	0.94741
0.16	0.15956	0.36	0.35902	0.56	0.55847	0.76	0.75793	0.96	0.95738
0.17	0.16954	0.37	0.36899	0.57	0.56844	0.77	0.76790	0.97	0.96735
0.18	0.17951	0.38	0.37896	0.58	0.57842	0.78	0.77787	0.98	0.97732
0.19	0.18948	0.39	0.38894	0.59	0.58839	0.79	0.78784	0.99	0.98730
0.20	0.19945	0.40	0.39891	0.60	0.59836	0.80	0.79782	1.00	0.99727

Mean Solar Time *required* = Mean Time at the *preceding* Sidereal Noon + the Equivalent to the
given Sidereal Time.

EXAMPLE.—To convert 22^h 26^m 58^s.75 Sidereal Time at Greenwich, Jan. 21, 1889, into Mean
Time.

Mean Time at the <i>preceding</i> Sidereal Noon, viz., January 20 -----		h	m	s
		22	26	58.75
For Sidereal Intervals. {		22	26	58.75
		26	0	0
		58	0	0
		0.75		
The Table gives the Equivalent Mean Intervals, {		3	59	7.54
		21	56	23.750
		25	55	74.1
			57	84.2
			0	74.8

The Sum is the Mean Time required, Jan. 21 - 2 22 25.62

DAY AND FRACTION OF THE YEAR FROM MEAN NOON
OF JAN. 1.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*
1	0	·0000	31	·0849	59	·1615	90	·2464	120	·3285	151	·4134
2	1	·0027	32	·0876	60	·1643	91	·2492	121	·3313	152	·4162
3	2	·0055	33	·0904	61	·1670	92	·2519	122	·3340	153	·4189
4	3	·0082	34	·0931	62	·1698	93	·2546	123	·3368	154	·4216
5	4	·0110	35	·0958	63	·1725	94	·2574	124	·3395	155	·4244
6	5	·0137	36	·0986	64	·1752	95	·2601	125	·3422	156	·4271
7	6	·0164	37	·1013	65	·1780	96	·2628	126	·3450	157	·4299
8	7	·0192	38	·1040	66	·1807	97	·2656	127	·3477	158	·4326
9	8	·0219	39	·1068	67	·1834	98	·2683	128	·3504	159	·4353
10	9	·0246	40	·1095	68	·1862	99	·2711	129	·3532	160	·4381
11	10	·0274	41	·1123	69	·1889	100	·2738	130	·3559	161	·4408
12	11	·0301	42	·1150	70	·1917	101	·2765	131	·3587	162	·4435
13	12	·0329	43	·1177	71	·1944	102	·2793	132	·3614	163	·4463
14	13	·0356	44	·1205	72	·1971	103	·2820	133	·3641	164	·4490
15	14	·0383	45	·1232	73	·1999	104	·2847	134	·3669	165	·4518
16	15	·0411	46	·1259	74	·2026	105	·2875	135	·3696	166	·4545
17	16	·0438	47	·1287	75	·2053	106	·2902	136	·3724	167	·4572
18	17	·0465	48	·1314	76	·2081	107	·2930	137	·3751	168	·4600
19	18	·0493	49	·1342	77	·2108	108	·2957	138	·3778	169	·4627
20	19	·0520	50	·1369	78	·2136	109	·2984	139	·3806	170	·4654
21	20	·0548	51	·1396	79	·2163	110	·3012	140	·3833	171	·4682
22	21	·0575	52	·1424	80	·2190	111	·3039	141	·3860	172	·4709
23	22	·0602	53	·1451	81	·2218	112	·3066	142	·3888	173	·4737
24	23	·0630	54	·1478	82	·2245	113	·3094	143	·3915	174	·4764
25	24	·0657	55	·1506	83	·2272	114	·3121	144	·3943	175	·4791
26	25	·0684	56	·1533	84	·2300	115	·3149	145	·3970	176	·4819
27	26	·0712	57	·1561	85	·2327	116	·3176	146	·3997	177	·4846
28	27	·0739	58	·1588	86	·2355	117	·3203	147	·4025	178	·4873
29	28	·0767			87	·2382	118	·3231	148	·4052	179	·4901
30	29	·0794			88	·2409	119	·3258	149	·4079	180	·4928
31	30	·0821			89	·2437			150	·4107		

* Add ·0037 if Fraction be required for the time t, see p. 29a.

DAY AND FRACTION OF THE YEAR FROM MEAN NOON
OF JAN. 1.

Day of the Month.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*
1	181	.4956	212	.5804	243	.6653	273	.7474	304	.8323	334	.9145
2	182	.4983	213	.5832	244	.6681	274	.7502	305	.8351	335	.9172
3	183	.5010	214	.5859	245	.6708	275	.7529	306	.8378	336	.9199
4	184	.5038	215	.5887	246	.6735	276	.7557	307	.8405	337	.9227
5	185	.5065	216	.5914	247	.6763	277	.7584	308	.8433	338	.9254
6	186	.5093	217	.5941	248	.6790	278	.7611	309	.8460	339	.9282
7	187	.5120	218	.5969	249	.6817	279	.7639	310	.8488	340	.9309
8	188	.5147	219	.5996	250	.6845	280	.7666	311	.8515	341	.9336
9	189	.5175	220	.6023	251	.6872	281	.7694	312	.8542	342	.9364
10	190	.5202	221	.6051	252	.6900	282	.7721	313	.8570	343	.9391
11	191	.5229	222	.6078	253	.6927	283	.7748	314	.8597	344	.9418
12	192	.5257	223	.6106	254	.6954	284	.7776	315	.8624	345	.9446
13	193	.5284	224	.6133	255	.6982	285	.7803	316	.8652	346	.9473
14	194	.5312	225	.6160	256	.7009	286	.7830	317	.8679	347	.9501
15	195	.5339	226	.6188	257	.7036	287	.7858	318	.8707	348	.9528
16	196	.5366	227	.6215	258	.7064	288	.7885	319	.8734	349	.9555
17	197	.5394	228	.6242	259	.7091	289	.7913	320	.8761	350	.9583
18	198	.5421	229	.6270	260	.7119	290	.7940	321	.8789	351	.9610
19	199	.5448	230	.6297	261	.7146	291	.7967	322	.8816	352	.9637
20	200	.5476	231	.6325	262	.7173	292	.7995	323	.8843	353	.9665
21	201	.5503	232	.6352	263	.7201	293	.8022	324	.8871	354	.9692
22	202	.5531	233	.6379	264	.7228	294	.8049	325	.8898	355	.9720
23	203	.5558	234	.6407	265	.7255	295	.8077	326	.8926	356	.9747
24	204	.5585	235	.6434	266	.7283	296	.8104	327	.8953	357	.9774
25	205	.5613	236	.6461	267	.7310	297	.8132	328	.8980	358	.9802
26	206	.5640	237	.6489	268	.7338	298	.8159	329	.9008	359	.9829
27	207	.5667	238	.6516	269	.7365	299	.8186	330	.9035	360	.9856
28	208	.5695	239	.6544	270	.7392	300	.8214	331	.9062	361	.9884
29	209	.5722	240	.6571	271	.7420	301	.8241	332	.9090	362	.9911
30	210	.5750	241	.6598	272	.7447	302	.8268	333	.9117	363	.9939
31	211	.5777	242	.6626			303	.8296			364	.9966

* Add .0037 if Fraction be required for the time t, see p. 292.

Days elapsed at Mean Noon of Jan. 1 of each year of the Table.											Days elapsed at Mean Noon.	
A.D.	0	200	400	600	800	1000	1200	1400	1600	1800	Month and Day.	1889.
	17	17	18	19	20	20	21	22	23	23		
0	21058	94108	67158	40208	13258	86308	59358	32408	05448	78497*		
4	22519	95569	68619	41669	14719	87769	60819	33869	06909	79957		
8	23980	97030	70080	43130	16180	89230	62280	35330	08370	81418		
12	25441	98491	71541	44591	17641	90691	63741	36791	09831	82879		
16	26902	99952	73002	46052	19102	92152	65202	38252	11292	84340		
20	28363	01413	74463	47513	20563	93613	66663	39713	12753*	85801		
24	29824	02874	75924	48974	22024	95074	68124	41174	14214	87262		
28	31285	04335	77385	50435	23485	96535	69585	42635	15675	88723		
32	32746	05796	78846	51896	24946	97996	71046	44096	17136	90184		
36	34207	07257	80307	53357	26407	99457	72507	45557	18597	91645		
40	35668	08718	81768	54818	27868	00918	73968	47018	20058	93106		
44	37129	10179	83229	56279	29329	02379	75429	48479	21519	94567		
48	38590	11640	84690	57740	30790	03840	76890	49940	22980	96028		
52	40051	13101	86151	59201	32251	05301	78351	51401	24441	97489		
56	41512	14562	87612	60662	33712	06762	79812	52862	25902	98950		
60	42973	16023	89073	62123	35173	08223	81273	54323	27363	00411		
64	44434	17484	90534	63584	36634	09684	82734	55784	28824	01872		
68	45895	18945	91995	65045	38095	11145	84195	57245	30285	03333		
72	47356	20406	93456	66506	39556	12606	85656	58706	31746	04794		
76	48817	21867	94917	67967	41017	14067	87117	60167	33207	06255		
80	50278	23328	96378	69428	42478	15528	88578	61628	34668	07716		
84	51739	24789	97839	70889	43939	16989	90039	63089	36129	09177		
88	53200	26250	99300	72350	45400	18450	91500	64550	37590	10638		
92	54661	27711	00761	73811	46861	19911	92961	66011	39051	12099		
96	56122	29172	02222	75272	48322	21372	94422	67472	40512	13560		
100	57583	30633	03683	76733	49783	22833	95883	68933	41973*	15021*		
104	59044	32094	05144	78194	51244	24294	97344	70394	43433	16481		
108	60505	33555	06605	79655	52705	25755	98805	71855	44894	17942		
112	61966	35016	08066	81116	54166	27216	00266	73316	46355	19403		
116	63427	36477	09527	82577	55627	28677	01727	74777	47816	20864		
120	64888	37938	10988	84038	57088	30138	03188	76238	49277	22325		
124	66349	39399	12449	85499	58549	31599	04649	77699	50738	23786		
128	67810	40860	13910	86960	60010	33060	06110	79160	52199	25247		
132	69271	42321	15371	88421	61471	34521	07571	80621	53660	26708		
136	70732	43782	16832	89882	62932	35982	09032	82082	55121	28169		
140	72193	45243	18293	91343	64393	37443	10493	83543	56582	29630		
144	73654	46704	19754	92804	65854	38904	11954	85004	58043	31091		
148	75115	48165	21215	94265	67315	40365	13415	86465	59504	32552		
152	76576	49626	22676	95726	68776	41826	14876	87926	60965	34013		
156	78037	51087	24137	97187	70237	43287	16337	89387	62426	35474		
160	79498	52548	25598	98648	71698	44748	17798	90848	63887	36935		
164	80959	54009	27059	00109	73159	46209	19259	92309	65348	38396		
168	82420	55470	28520	01570	74620	47670	20720	93770	66809	39857		
172	83881	56931	29981	03031	76081	49131	22181	95231	68270	41318		
176	85342	58392	31442	04492	77542	50592	23642	96692	69731	42779		
180	86803	59853	32903	05953	79003	52053	25103	98153	71192	44240		
								See end of Table				
184	88264	61314	34364	07414	80464	53514	26564	99604	72653	45701		
188	89725	62775	35825	08875	81925	54975	28025	01065	74114	47162		
192	91186	64236	37286	10336	83386	56436	29486	02526	75575	48623		
196	92647	65697	38747	11797	84847	57897	30947	03987	77036	50084		
	17	18	19	20	20	21	22	23	23	24		
											A.D.	Days.
											1580	2298153
											1581	8519
											1582	8884
											1583	9239
											1584	9604
											* denotes a common year.	

* * The Longitudes are reckoned from the Meridian of Greenwich.

	Latitude.				Longitude.			
	°	'	"		h	m	s	
ADELAIDE - - - - -	34	55	33.8	S.	9	14	21.3	E.
ALBANY, U.S. - - - - -	42	39	49.6	N.	4	54	59.5	W.
ALGIERS - - - - -	36	45	7.9	N.	0	12	11.4	E.
ANN-ARBOR, U.S. - - - - -	42	16	48	N.	5	34	55.2	W.
ARMAGH - - - - -	54	21	12.7	N.	0	26	35.5	W.
ATHENS - - - - -	37	58	20	N.	1	34	55.7	E.
BERLIN - - - - -	52	30	16.7	N.	0	53	34.9	E.
BILE - - - - -	51	12	25	N.	0	27	5.5	E.
BIRK CASTLE (The Earl of Rosse) -	53	5	47	N.	0	31	40.9	W.
BOLOGNA - - - - -	44	29	47	N.	0	45	24.5	E.
BONN - - - - -	50	43	45.0	N.	0	28	23.9	E.
BORDEAUX - - - - -	44	50	17	N.	0	2	5.4	W.
BRESLAU - - - - -	51	6	56.1	N.	1	8	9.1	E.
BRUSSELS - - - - -	50	51	10.7	N.	0	17	28.9	E.
CAMBRIDGE - - - - -	52	12	51.6	N.	0	0	22.8	E.
CAMBRIDGE, U.S. - - - - -	42	22	48	N.	4	44	30.7	W.
CAPE OF GOOD HOPE - - - - -	33	56	3.5	S.	1	13	54.7	E.
CARLSRUHE - - - - -	49	0	29.6	N.	0	33	36.5	E.
CHICAGO - - - - -	41	50	1.0	N.	5	50	26.8	W.
CHRISTIANIA - - - - -	59	54	43.7	N.	0	42	54.2	E.
CINCINNATI, New Observatory - -	39	8	19	N.	5	37	41.3	W.
COPENHAGEN, New Observatory - -	55	41	13.6	N.	0	50	19.2	E.
CORDOBA - - - - -	31	25	15.5	S.	4	16	48.2	W.
CRACOW - - - - -	50	3	50.0	N.	1	19	50.4	E.
DORPAT - - - - -	58	22	47.1	N.	1	46	53.6	E.
DRESDEN (Baron d'Engelhardt) -	51	2	16.8	N.	0	54	54.8	E.
DUBLIN (DUNSINK) - - - - -	53	23	13	N.	0	25	22	W.
DUN ECHT (The Earl of Crawford) -	57	9	36	N.	0	9	40	W.
DURHAM - - - - -	54	46	6.2	N.	0	6	19.8	W.
EDINBURGH - - - - -	55	57	23.2	N.	0	12	43.6	W.
FLORENCE, Musée Royal - - - -	43	46	4.1	N.	0	45	1.5	E.
FLORENCE, Arcetri - - - - -	43	45	14.4	N.	0	45	3.1	E.
GENEVA - - - - -	46	11	58.8	N.	0	24	37.1	E.
GEORGETOWN COLLEGE, D.C., U.S. -	38	54	26.1	N.	5	8	18.2	W.
GLASGOW - - - - -	55	52	42.8	N.	0	17	10.6	W.
GLASGOW, U.S. - - - - -	39	16	16.8	N.	6	11	18.9	W.
GOtha, New Observatory - - - -	50	56	37.5	N.	0	42	50.5	E.
GÜTTINGEN - - - - -	51	31	48	N.	0	39	46.5	E.
GREENWICH - - - - -	51	28	38.4	N.	0	0	0	
HAMBURG - - - - -	53	33	7.0	N.	0	39	53.7	E.
HAMILTON COLLEGE, CLINTON, U.S. -	43	3	16.5	N.	5	1	37.4	W.

•• The Longitudes are reckoned from the Meridian of Greenwich.

	Latitude.				Longitude.			
	°	'	"		h	m	s	
HELSINGFORS - - - - -	60	9	42.3	N.	1	39	49.2	E.
HONGKONG - - - - -	22	18	12.2	N.	7	36	41.9	E.
KAZAN - - - - -	55	47	24.2	N.	3	16	28.9	E.
KEW - - - - -	51	28	6	N.	0	1	15.1	W.
KIEL - - - - -	54	20	28.6	N.	0	40	35.5	E.
KÖNIGSBERG - - - - -	54	42	50.6	N.	1	21	58.9	E.
KREMSMUNSTER - - - - -	48	3	23.8	N.	0	56	32.8	E.
LEIPSIK - - - - -	51	20	6.2	N.	0	49	34.0	E.
LEYDEN - - - - -	52	9	20.3	N.	0	17	56.2	E.
LEYTON (J. Gurney Barclay, Esq.) -	51	34	34	N.	0	0	0.9	W.
LISBON, Marine Observatory - - -	38	42	15.2	N.	0	36	33.6	W.
LISBON, Royal Observatory - - -	38	42	31.3	N.	0	36	44.7	W.
LIVERPOOL (BIDSTON, BIRKENHEAD) -	53	24	4	N.	0	12	17.2	W.
LUND - - - - -	55	41	54.0	N.	0	52	45.9	E.
LYONS - - - - -	45	41	40.0	N.	0	19	7.9	E.
MADRAS - - - - -	13	4	8.1	N.	5	20	59.4	E.
MADRID - - - - -	40	24	29.7	N.	0	14	45.4	W.
MANHEIM - - - - -	49	29	12.9	N.	0	33	50.8	E.
MARBURG - - - - -	50	48	46.9	N.	0	35	5.6	E.
MARKREE (Col. Cooper) - - - -	54	10	31.8	N.	0	33	48.4	W.
MARSEILLES - - - - -	43	18	19.1	N.	0	21	34.8	E.
MELBOURNE, New Observatory - -	37	49	53.4	S.	9	39	54.8	E.
MILAN, Brera - - - - -	45	28	0.7	N.	0	36	46.1	E.
MODENA - - - - -	44	38	52.8	N.	0	43	42.8	E.
MOSCOW - - - - -	55	45	19.8	N.	2	30	17.0	E.
MUNICH, Bogenhausen - - - - -	48	8	45	N.	0	46	26.5	E.
NAPLES, Capo di Monte - - - - -	40	51	45.4	N.	0	56	58.9	E.
NEUCHÂTEL - - - - -	46	59	51.0	N.	0	27	49.8	E.
NICE (Mont-gros) - - - - -	43	43	16.7	N.	0	29	12.2	E.
NICOLÉFF - - - - -	46	58	20.6	N.	2	7	55.1	E.
ODESSA - - - - -	46	28	36.2	N.	2	3	2.4	E.
ORWELL PARK, IPSWICH (Col. Tomline)	52	0	33	N.	0	4	55.8	E.
OXFORD, Radcliffe Observatory - -	51	45	36.0	N.	0	5	2.6	W.
OXFORD, University Observatory - -	51	45	34.2	N.	0	5	0.4	W.
PADUA - - - - -	45	24	2.5	N.	0	47	29.0	E.
PALERMO - - - - -	38	6	44	N.	0	53	24.2	E.
PARIS - - - - -	48	50	11	N.	0	9	21.0	E.
PETERSBURG, Academy of Sciences -	59	56	29.7	N.	2	1	13.5	E.
POLA - - - - -	44	51	48.1	N.	0	55	23.1	E.
PORTSMOUTH - - - - -	50	48	3	N.	0	4	23.9	W.
PRAGUE - - - - -	50	5	18.5	N.	0	57	41.9	E.

* * The Longitudes are reckoned from the Meridian of Greenwich.

	Latitude.				Longitude.			
	°	'	"		h	m	s	
POLKOWA - - - - -	59	46	18.7	N.	2	1	18.7	E.
QUEBEC - - - - -	46	48	30	N.	4	44	49.0	W.
RIO DE JANEIRO, Imperial Observatory	22	54	23.8	S.	2	52	41.4	W.
ROME, Roman College - - - - -	41	53	52.2	N.	0	49	54.7	E.
SAN FERNANDO, near CADIZ - - - -	36	27	41.5	N.	0	24	49.6	W.
SANTIAGO DE CHILE - - - - -	33	26	42.0	S.	4	42	46.3	W.
STOCKHOLM - - - - -	59	20	34.0	N.	1	12	14.0	E.
STONTHURST - - - - -	53	50	40	N.	0	9	52.7	W.
STRASBURG - - - - -	48	35	0.2	N.	0	31	2.4	E.
SYDNEY - - - - -	33	51	41.1	S.	10	4	50.8	E.
TOULOUSE - - - - -	43	36	47.0	N.	0	5	51.0	E.
TULSE HILL, near LONDON (William Huggins, Esq.)	51	26	47	N.	0	0	27.7	W.
TURIN, New Observatory - - - - -	45	4	6	N.	0	30	48.4	E.
UPSALA, New Observatory - - - - -	59	51	29.4	N.	1	10	30.3	E.
UTRECHT - - - - -	52	5	10.5	N.	0	20	31.3	E.
VENICE - - - - -	45	25	49.5	N.	0	49	25.4	E.
VIENNA, Josephstadt (Herr Oppolzer)	48	12	53.8	N.	1	5	25.3	E.
VIENNA, Old Observatory - - - - -	48	12	35.5	N.	1	5	31.7	E.
VIENNA, New Observatory - - - - -	48	13	55.4	N.	1	5	21.5	E.
WARSAW - - - - -	52	13	5.7	N.	1	24	7.4	E.
WASHBURN, Obs., WISCONSIN, U.S. -	43	4	36.6	N.	5	57	37.9	W.
WASHINGTON, U.S., Naval Obs. - -	38	53	38.8	N.	5	8	12.1	W.
WILHELMSHAVEN - - - - -	53	31	51.8	N.	0	32	35.2	E.
WILNA - - - - -	54	41	0	N.	1	41	11.9	E.
WINDSOR, N.S.W. (J. Tebbutt, Esq.)	33	36	28.9	S.	10	3	21.8	E.

EXPLANATION OF THE ARTICLES

CONTAINED IN

THE NAUTICAL ALMANAC AND ASTRONOMICAL EPHEMERIS

FOR THE YEAR 1889.

ALL the articles of the Ephemeris have been computed for Greenwich MEAN solar time ; and where they are given for apparent solar or sidereal time, it has been chiefly for the convenience of astronomers. A *day* is the interval of time between the departure of any meridian from a heavenly body and its succeeding return to it, and derives its name from the body with which the motion of the meridian is compared. The interval between the departure and return of a meridian to the Sun is called a *solar day* ; in the case of the Moon, the interval is called a *lunar day* ; and in that of a Star, a *sidereal day*. The revolution of the Earth on its axis is always performed in the same time ; and if the heavenly bodies preserved the same positions with respect to each other, the intervals between the departure and return of a meridian to each would be the same, and all days, consequently, of equal length. The Sun, (or more strictly, the Earth in its orbit,) the Moon, and the Planets are, however, in continual motion ; and with velocities not only different from each other, but varying in each particular body : the length of a day, as determined by any of these bodies, is therefore a variable quantity.

Astronomers, with a view of obtaining a convenient and uniform measure of time, have recourse to a *mean solar day*, the length of which is equal to the mean or average of all the apparent solar days in a year. An imaginary Sun, called the *mean Sun*, is conceived to move uniformly in the Equator with the real Sun's *mean* motion in Right Ascension, and the interval between the departure of any meridian from the *mean Sun* and its succeeding return to it, is the duration of the *mean solar day*. Clocks and chronometers are adjusted to mean solar time ; so that a complete revolution (through 24 hours) of the hour hand of one of these machines should be performed in exactly the same interval as the revolution of the Earth on its axis with respect to the mean Sun. If the mean Sun could be observed on the meridian at the instant that the clock indicated 0^h 0^m 0^s, it would again be observed there when the hour hand returned to the same position. As the time deduced from observation of the *true Sun* is called *true* or *apparent* time, so the time deduced from the *mean Sun*, or indicated by the machines which represent its motion, is denominated *mean time*.

Mean time cannot be obtained from observation ; but it may readily be deduced from an observation of the true Sun, with the aid of the equation of time, which is the angular distance in time between the mean and the true Sun. Suppose

the true Sun to be observed on the meridian of Greenwich, Jan. 1, 1889; it would then be apparent noon at that meridian; the equation of time at this instant is $4^m\ 0^s.48$, and, by the precept at the head of the column, it is "*to be added to apparent time*"; hence it appears that the corresponding mean time is Jan. 1, $0^h\ 4^m\ 0^s.48$, or that the mean Sun had passed the meridian previously to the true Sun, and that at the instant of observation the mean time clock ought to indicate this time.

A mere inspection of the columns of the Ephemeris is, of itself, sufficient to show that the quantities are continually varying, and that some reduction is necessary where data are to be obtained for any time differing from that for which the quantities are registered. Take, for instance, the Sun's Right Ascension on Page II. of the month of January; on January 1, it is $18^h\ 49^m\ 19^s.00$; on January 2, it is $18^h\ 53^m\ 43^s.72$; in the course of 24 mean hours it has therefore increased by $4^m\ 24^s.72$. If, then, the Right Ascension were required for any time between January 1 and January 2, as at January 1, 6^h , it would be necessary to increase the Right Ascension on January 1, by the proportional part of the daily increase due for the 6^h , viz., by one-fourth part, or $1^m\ 6^s.18$. Let a person be now supposed to be under a meridian 15° West of Greenwich. The positions of the heavenly bodies, as referred to the centre of the Earth, are independent of meridians, and are the same for all places at the same absolute instant; but the relative times at Greenwich and the assumed meridian would be different. If it were 1^h from mean noon at the one place, it could not be 1^h from mean noon at the other; for time, as regards a visible phenomenon, is considered as the hour angle of the Sun *westward* from a given meridian, and at the same absolute moment of time the Sun *cannot* be at the same hour angle (*reckoning westward*) from two meridians which are 15° distant from each other. Before making use of the Ephemeris, it is therefore necessary to ascertain, in every instance, the distance of the Sun (*in time*) from the meridian of Greenwich, or what is commonly called the corresponding Greenwich time; and this is evidently equal to the given time under the assumed meridian, *increased or diminished* by the difference (*in time*) of the two meridians, according as the assumed meridian is to the *Westward or Eastward* of Greenwich. In a mean solar day or 24 mean solar hours, the Earth, by its rotation from West to East, has caused every meridian in succession from East to West to pass the mean Sun; and since the motion is uniform, all the meridians distant from each other 15° will have passed the mean Sun, at intervals of one mean hour; the meridian to the eastward passing first, or being, as compared with the Sun, always one mean hour in advance of the westerly meridian. When it is 6^h after mean noon at a place 15° West of Greenwich, it is therefore 7^h after mean noon at Greenwich; and it is for this Greenwich time that we must deduce the quantities * required from the Ephemeris.

The day of the month in this Ephemeris (Page I. excepted, being for *apparent noon*) is assumed to begin at mean noon of the corresponding civil day, or at the instant when a clock shows $0^h\ 0^m\ 0^s$, Greenwich mean time, and is continued through the 24 hours, to the following mean noon; it may therefore be called the *mean astronomical day*, although, in practice, astronomers begin the day at the moment the true Sun's centre is on their meridian.

* Meridian passages, or times of transit, excepted. See examples of the Moon, page 498.

In the civil, or common, method of reckoning, the day commences at the *preceding* midnight, and is counted only to 12 hours or noon, when the 12 hours are reckoned over again to the next midnight. The civil reckoning is therefore always 12^h in advance of the astronomical reckoning; hence the well known rule for determining the latter from the former, viz.:—In civil time, for P.M. make no change, for A.M. diminish the day of the month by 1 and add 12 to the hours. Thus:—Jan. 2nd, 7^h 49^m P.M. civil time, is Jan. 2, 7^h 49^m astronomical time, but Jan. 2nd, 7^h 49^m A.M. civil time, is Jan. 1, 19^h 49^m astronomical time.

To each month there are devoted eighteen pages, distinguished by the Roman numerals I. to XVIII.

For convenience of interpolation, the quantities that follow next in order of succession have been added at the bottom of each page. Thus the quantities opposite to February 1 will be found inserted also opposite to January 32.

Page 1 contains for every 10th day of the year 1889—

The Obliquity of the Ecliptic, or the *apparent* inclination of the plane of the Ecliptic to that of the Equator.

The Sun's Horizontal Parallax, or the angle under which the equatorial semidiameter of the earth would appear at the Sun's centre.

The Sun's Aberration or the difference between the *true* longitude and the *apparent* longitude of the Sun. The longitudes derived from Solar Tables include *aberration* and are therefore *apparent* longitudes, such as are contained in this ephemeris. If the *true* longitude of the Sun be required, the *aberration* must be added to the *apparent* longitude.

The Precession in Longitude or the retrograde motion on the Ecliptic of the point of intersection of the Equator and Ecliptic or first point of Aries: which is required for reducing a longitude reckoned from the Mean Equinox of any date to that of any other date.

Nutation. The *true* place of the equinox at any time differs from its *mean* place by a quantity termed the Nutation, to be applied with the proper sign to a longitude reckoned from the *mean* equinox to obtain the value with respect to the *true* equinox. The Nutation in Right Ascension similarly serves to find the *apparent* point of intersection of the Ecliptic on the Equator. In the same manner the Nutation in Obliquity is required to reduce the *mean* to the *true* obliquity.

The Mean Longitude of the Moon's Ascending Node. The place for any intermediate day is readily found from the daily motion $-3^{\circ} 1773$.

Page I. of each Month.

The contents of this page are adapted to *apparent noon*, or the instant when the Sun's centre is on the meridian of Greenwich. The *Sun's Right Ascension*, here given, is *affected with aberration*, and reckoned from the true equinox; it is therefore the sidereal time at apparent noon, or the time which should be shown by a sidereal clock, at that instant. The *Sun's Apparent Declination* is the angular distance of the Sun from the equator, measured on the meridian.

The *Var. in 1 hour* is intended to facilitate the reduction of the quantities from apparent noon to any other time. It is the variation at *noon*, and requires to be

reduced to midway between noon and the time at which the R.A., Dec., or Eq. of time is required. *Example* :—Required the Sun's Declination on Jan. 16th, 1889, at apparent noon in longitude 60° West of Greenwich. The longitude in time is 4^h , and being West, the corresponding apparent astronomical time at Greenwich is Jan. 16, 4^h ; the var. of the Dec. in 1 hour at Jan. 16, 0^h or noon is $29''\cdot 15$, and at Jan. 17, 0^h it is $30''\cdot 14$, therefore for midway between Jan. 16, 0^h and 4^h it is $29''\cdot 23$, which multiplied by 4 gives $1' 56''\cdot 9$ to be *subtracted* from the Dec. at noon, or S. $20^\circ 50' 25''\cdot 9$; the Dec. required is therefore S. $20^\circ 48' 29''\cdot 0$.

The *Sidereal Time of the Sun's Semidiameter passing the Meridian* is useful for reducing a transit observation of either limb of the Sun, when one only has been observed, to the transit of the centre.

The *Equation of Time* is the difference between apparent and mean time, and therefore serves for the conversion of either time into the other. The numbers here given show, for Greenwich apparent noon, the distance of the mean Sun from the meridian, or the portion of time to be *added to* or *subtracted from*, (according to the precept at the head of the column,) Greenwich apparent noon to obtain the corresponding mean time at the same meridian, or the time which should be shown by a mean time clock.

Where time is deduced from observations of the Sun, the *immediate* result is *apparent* time; to convert it into mean time the equation of time is necessary. Thus, suppose the apparent time deduced from an observation of the Sun on Jan. 16th, 1889, in longitude 45° or 3^h East of Greenwich, to be 6^h P.M. civil time, and it were required to convert it into mean time; subtracting the difference of longitude 3^h from the apparent time at the place, we have Jan. 16, 3^h for the corresponding astronomical apparent time at Greenwich. The variation of the equation in 1 hour at January 16, 0^h or *apparent noon* is $0^m 83\cdot 4$, and at Jan. 17, 0^h it is $0^m 80\cdot 5$, consequently, for midway between noon and 3^h , or $1^h 30^m$, it is $0^m 83\cdot 2$, which multiplied by 3 gives $2^m 50$ to be *added* (because the equation is increasing) to $10^m 10^m 06$, the equation of time at apparent noon, the result is $10^m 12^m 56$, to be applied according to the precept at the head of the column, whence we obtain $6^h 10^m 12^m 56$ for the mean time required.

At page I. of the month of April, ^{*added to*}_{*subt. from*} at the head of the column signifies that a change of precept occurs in the course of the month; and between the equations opposite to April 14 and 15, the black line indicates that the change occurs between those days. The upper precept applies to all the quantities above the black line; and the lower to all below it: that is, the equation of time is to be *added to* apparent time to the instant at which the equation becomes $0^m 0^s$, which happens between April 14 and 15; but after that instant the equation is to be *subtracted from* apparent to obtain mean time.

Page II. of each Month.

The *Sun's Apparent Right Ascension and Declination* at mean noon denote the *apparent* position of the true Sun reckoned from the true equinox, at the instant the Greenwich mean time clock indicates $0^h 0^m 0^s$, or when the hour angle of the true Sun is equal to the equation of time.

To find the Right Ascension and Declination for any other mean time and place, as at 10^h 16^m A.M. civil time, March 2nd, 1889, in longitude 98°, or 6^h 32^m West of Greenwich. The astronomical time corresponding to 10^h 16^m A.M. March 2nd, is March 1, 22^h 16^m; the longitude, being West of Greenwich, must be added to March 1, 22^h 16^m, and the result, March 2, 4^h 48^m, is the corresponding Greenwich mean time, for which the Right Ascension and Declination are to be found. The difference between the Right Ascensions on March 2 and 3 is 3^m 43^s 80, that is, in the 24 mean hours succeeding March 2, the Right Ascension has increased by this quantity, and the increase in 4^h 48^m is obtained by the proportion:—24^h : 3^m 43^s 80 :: 4^h 48^m : 44^s 76; which, being added to 22^h 54^m 7^s 76, the Right Ascension on March 2, gives 22^h 54^m 52^s 52 for the Right Ascension at the time proposed.

In a similar manner the Declinations indicate a decrease of 23' 0'' 2 in the 24 hours; therefore, 24^h : 23' 0'' 2 :: 4^h 48^m : 4' 36'' 0, which, subtracted from S. 7° 0' 40'' 6, leaves S. 6° 56' 4'' 6 for the Declination required. Correction for second difference would increase the Right Ascension by 0'' 04, and the Declination by 0'' 5.

The *Semidiameter of the Sun* is the angle at the centre of the earth subtended by the Sun's semidiameter, and is required for reducing observations of the limb to the centre, as in measuring the altitude of the Sun's upper or lower limb, or the distance of the Moon from the Sun.

The *Equation of Time* at mean noon serves more particularly to convert *mean* into *apparent* time by applying the equation according to the precept at the head of the column: thus, if from mean noon of April 2, or April 2, 0^h, be subtracted the equation 3^m 32^s 20; April 1, 23^h 56^m 27^s 80 is the corresponding apparent time. To find the equation of time at 11^h 58^m A.M. civil time on April 15th, in longitude 4°, or 0^h 16^m, East of Greenwich. Subtract the difference of longitude from the given time, because it is East, and the corresponding astronomical mean time at Greenwich is April 14, 23^h 42^m. The variation in 24 hours is 14^s 97, that is, the sum of the equations belonging to April 14 and 15, because the equation has decreased to zero and then increased in the interval, therefore 24^h : 14^s 97 :: 23^h 42^m : 14^s 78, which, being greater than 0^m 11^s 50, the equation on April 14, which was decreasing, shows that in the 23^h 42^m the equation has passed through zero or 0, and is now increasing, and the difference 3^s 28 is the equation of time at the time proposed to be added to mean time.

Sidereal Time at Mean Noon is the angular distance of the first point of Aries, or the true vernal equinox, from the meridian, at the instant of mean noon: it is therefore the Right Ascension of the mean Sun, or the time shown by a sidereal clock at Greenwich, when the mean time clock indicates 0^h 0^m 0^s.

The sidereal time here given is that in common use among astronomers, and expresses the actual hour angle from the meridian, westward, of the true equinoctial point at the moment of observation. It is therefore affected with the equation of the equinoxes; and is not, strictly speaking, a *mean* or uniformly increasing quantity. It ought, therefore, to be termed *apparent sidereal time* in the same manner as apparent solar time reckons from the actual arrival of the sun's centre on the meridian; and in like manner, as mean solar time is reckoned from the

arrival of an imaginary sun, moving uniformly with its mean velocity, so *mean sidereal* time or \odot 's mean longitude ¹⁵ would be reckoned from the transit of, not the *true*, but the *mean* equinoctial point. The smallness of the fluctuations to which a

clock, regulated to *apparent* sidereal time compared with one regulated to *mean* sidereal time, is subject (being at the utmost only 2^h 3 in a period of nineteen years), has prevented the practical inconvenience of this from being felt: no clock being sufficiently perfect to go during so long a period without frequent re-adjustment; and as the corrections applied by astronomers to the observed right ascensions of all objects are adapted to this supposed irregularity in the rate of the clock, the mean right ascensions thence deduced will be correct.

The sidereal time at mean noon is useful when mean solar time is to be deduced from observation, and for the reduction of sidereal to mean solar time, also *vice versâ*, by a Table of Acceleration of Sidereal on Mean solar time, and the corresponding Table of Retardation of Mean on Sidereal time, according to the following rule:—Convert the interval from the mean noon immediately preceding, from the denomination given, to that required; and if mean time be required, the result will be that which the clock should show; but if sidereal time be sought, the result must be added to the sidereal time at the preceding mean noon.

Example.—To convert 22^h 26^m 58^s 75 sidereal time, January 21, 1889, into mean solar time, for the meridian of Greenwich.

	h	m	s
Sidereal time given - - - - -	22	26	58 ⁷⁵
Sidereal time at mean noon, January 21 - - - -	20	4	9 ⁷³
<hr/>			
Interval in sidereal time from mean noon - - - -	2	22	49 ⁰²
Retardation of mean on sidereal time for the interval	-	23	40
<hr/>			

Mean solar time required - - - - - 22 25⁶²

which is the interval elapsed since mean noon; and the time on a mean time clock.

Vice versâ, to convert 22^h 25^m 62^s mean solar time into sidereal time for the same meridian.

	h	m	s
Mean interval from mean noon, January 21 - - -	2	22	25 ⁶²
Acceleration of sidereal on mean time for the interval	+	23	40
<hr/>			
Sidereal interval from mean noon - - - - -	2	22	49 ⁰²
Sidereal time at mean noon, January 21 - - - -	20	4	9 ⁷³
<hr/>			

Sidereal time required - - - - - 22 26 58⁷⁵

which is the time on a sidereal clock at the instant in question.

If the place of observation be not on the meridian of Greenwich, the sidereal time must be corrected by the *addition* of 9^s 8565 for each hour (and proportional parts for the minutes and seconds) of longitude, if the place be to the West of Greenwich; but by its *subtraction*, if to the East. Thus in 9^h 10^m 6^s West longitude, the sidereal time at mean noon, January 21, must be corrected by adding 1^m 30^s 37, thus giving 20^h 5^m 40^s 10 for the time to be used.

The conversion of mean solar to sidereal time, and *vice versed*, may, however, be performed, perhaps, with less liability to error, by the Tables of Time Equivalents, pp. 480 to 483. These Tables differ from the Tables of Acceleration and Retardation, in containing the *values* of intervals of each species of time, expressed in terms of the other, instead of the *corrections*.

Page III. of each Month.'

The *Sun's Longitude*, here given, is *affected with aberration*, and reckoned from the *true* equinox: it is therefore the apparent longitude of the Sun at the instant of mean noon; or it is (if *R* denote the Radius Vector) the *true* Longitude of the Sun at the time $0^h - 497^m.78 R$, aberration causing the Sun to appear behind its true place in the Ecliptic.

The *Sun's Latitude* is the angular distance of the Sun's centre from the plane of the Ecliptic, measured on a circle perpendicular to that plane.

The *Logarithm of the Radius Vector of the Earth* is the logarithm of the distance between the centre of the Earth and the true place of the centre of the Sun at mean noon, the mean distance, or the semi-axis major of the orbit, being considered unity.

The *Mean Time of Transit of the First Point of Aries* is the distance of the *mean* Sun from the meridian, at the instant when the *true* point of intersection of the ecliptic and equator (called the first point of Aries) is on the meridian of Greenwich; and as the distance of the first point of Aries from the meridian, at the instant the mean Sun is on the meridian, is denominated sidereal time at mean noon, this may, by analogy, be termed the *mean time at sidereal noon*. It is the time on the mean time clock adjusted to the Greenwich meridian, at the moment that the sidereal clock indicates exactly $0^h 0^m 0^s$. The use of this column is to facilitate the reduction of sidereal to mean solar time, with the help of the Table of Time Equivalents, given at pages 482 and 483.

The *Moon's Semidiameter* is the angle under which her Semidiameter would appear if viewed from the centre of the Earth; and the *Horizontal Parallax* is the *greatest* angle under which the Earth's equatorial semidiameter would appear if seen from the centre of the Moon. The former is requisite to obtain the position of the centre from an observation of the Moon's *limb*, as in all cases of altitudes or lunar distances; the latter, for computing the horizontal parallax of the Moon at any given latitude on the Earth, *considered as a spheroid*; also for finding the parallax in altitude, right ascension, &c., for reducing an observation of the Moon, to what it would be if made at the centre of the earth.

Example. To find the Moon's semidiameter and horizontal parallax at 5^{*h*} A.M. civil time, March 15^{*th*}, 1889, at a place 15°, or 1^{*h*} to the East of Greenwich. The equivalent mean astronomical time at the place, is March 14, 17^{*h*}, from which subtracting 1^{*h*}, because the place is to the East of Greenwich, we have March 14, 16^{*h*} for the corresponding time at Greenwich, or 4^{*h*} after midnight. For ordinary purposes, it will suffice to take the proportional part of the difference in the 12 hours which include the given time for the correction of the preceding registered value; thus the semidiameter for March 14, 12^{*h*} or midnight, is 15' 27".5, and for 15, 0^{*h*} or noon, it is 15' 33".4; the difference is 5".9.

Therefore, $12^h : 5''.9 :: 4^h : 2''.0$, which *added* (because the quantities are increasing) to $15' 27''.5$, gives $15' 29''.5$ for the Moon's semidiameter at the time proposed. Similarly the horizontal parallax for March 14, 12^h or midnight, is $56' 38''.2$; and for 23, 0^h or noon, it is $56' 59''.6$; the difference is $21''.4$; therefore, $12^h : 21''.4 :: 4^h : 7''.1$, which *added* to $56' 38''.2$ gives $56' 45''.3$ for the horizontal parallax required. If greater accuracy be desired, a correction must be applied, on account of second differences.

Page IV. of each Month.

The *Moon's Longitude and Latitude* at mean noon and midnight indicate the position of the Moon at these respective times, referred to the true equinox and the Ecliptic, as it would be seen from the centre of the Earth.

The *Moon's Age* at mean noon is the mean time elapsed since the Moon's ecliptic conjunction with the Sun, or since the Sun and Moon had the same Longitude.

The *Moon's Meridian Passage* is the Greenwich mean astronomical time, at which the Moon's centre is on the *upper* or *lower* meridian of Greenwich. The asterisks indicate the day that the Moon does not pass the upper or lower meridian at Greenwich. This occurs in every lunation, in consequence of the lunar day being longer than the mean solar day, and including it within its limits.

The mean astronomical time of upper transit under any other meridian may be obtained by subtracting or adding, the proportional part of its *preceding* or *following* difference, due to the longitude according as the longitude is *East* or *West* of Greenwich.

Example. To find the mean astronomical time of the Moon's upper transit on April 22nd, 1889, about 6^h A.M. civil time, in longitude 60° or 4^h East of Greenwich, April 22 A.M. is April 21 astronomical time; on April 21 the upper meridian passage is $17^h 59^m.5$ and the *preceding* difference $59^m.2$, therefore $24^h : 59^m.2 :: 4^h : 9^m.9$ to be *subtracted* from $17^h 59^m.5$ because the longitude is East of Greenwich, giving $17^h 49^m.6$ for the time required. Had the longitude been West of Greenwich the *following* difference must have been taken, and the result would have been $24^h : 56^m.4 :: 4^h : 9^m.4$ to be *added* to $17^h 59^m.5$. The times thus deduced are sufficiently accurate for the purposes usually required.

Pages V. to XII. of each Month.

The *Moon's Right Ascension and Declination* for every hour of the day, with the *Variations of Right Ascension and Declination in 10 minutes*. The numbers represent the position of the Moon, with respect to the true equinox and the equator, as it would appear from the centre of the Earth. The Right Ascension for any time is obtained in the following manner: Reduce the "Var. of R.A. in 10^m " to midway between the time for which the Right Ascension is required and the preceding hour in the Ephemeris, and then obtain the correction by simple proportion. Thus, suppose the Right Ascension of the

Moon were required at $9^h 40^m$ A.M. mean civil time on January 14th, 1889, or January 13, $21^h 40^m$ mean astronomical time, in longitude 60° , or 4^h East of Greenwich. The given time, $21^h 40^m$, diminished by 4^h , gives the corresponding Greenwich time $17^h 40^m$. The "Var. in 10^m " at 17^h is $20''.964$, and at 18^h , $20''.993$; for $17^h 20^m$ it is $20''.974$. Hence, as $10^m : 20''.974 :: 40^m : 1^m 23''.90$, which being added to $5^h 20^m 47''.39$, the Right Ascension at 17^h , gives $5^h 22^m 11''.29$ for the Right Ascension at the time proposed. The Declination is found in a similar manner. In the present case the "Var. of Dec. in 10^m " at 17^h , is $43''.79$, at 18^h , $42''.86$; for $17^h 20^m$ it is therefore $43''.48$. Hence, $10^m : 43''.48 :: 40^m : 2' 53''.9$, which being added (because the Declinations are increasing) to N. $20^\circ 27' 6''.6$, the Declination at 17^h , gives N. $20^\circ 30' 0''.5$.

The Phases of the Moon. These are given at page XII. The numbers denote the Greenwich mean astronomical time, at which the difference of Longitude between the Sun and the Moon is 0° , 90° , 180° , or 270° , being

0° at the New Moon,
 90° at the First Quarter,
 180° at the Full Moon,
 270° at the Last Quarter.

The Moon's Apogee and Perigee. The numbers here given indicate, to the nearest hour, the Greenwich mean time at which the Moon is respectively at her greatest and least distance from the Earth.

Pages XIII. to XVIII. of each Month.

Lunar Distances.—These pages contain, for every third hour of Greenwich mean time, the angular distances, available for the determination of the longitude, of the apparent *centre* of the Moon from the Sun, the larger planets and certain stars as they would appear from the centre of the Earth. When a Lunar Distance has been observed, and reduced to the centre of the Earth, by clearing it of the effects of parallax and refraction, the numbers in these pages enable us to ascertain the exact Greenwich mean time at which the objects would have the same distance. They are arranged, from *west* to *east*, commencing each day with the object which is at the greatest distance *westward* of the Moon, in the order in which they appear; W. indicating that the object is west, and E. east of the Moon.

The columns headed "P.L. of diff." contain the proportional logarithms of the differences of the distances at intervals of three hours, which are used in finding the Greenwich time corresponding to a given distance, according to the following rule, viz.: Take the difference between the reduced distance and the *nearest* distance *preceding* it, in order of time, in the Ephemeris; from the proportional logarithm of this difference subtract the proportional logarithm in the Ephemeris; the remainder will be the proportional logarithm of a portion of time to be added to the hour answering to the *nearest* preceding distance, to obtain the approximate Greenwich mean time corresponding to the given distance.

If the distance between the Moon and a Star increased or decreased uniformly, the Greenwich times corresponding to a given distance, as found by the above rule, would be correct; but as this is not the case, a correction must be applied to the time so found for the variation of the differences of the distances. This correction may be obtained by means of the Table at page 476, in the following manner :

1. Find the approximate interval by the preceding rule.
2. Take the differences between the proportional logarithm following the distance in the Ephemeris, and the proportional logarithms immediately to the left and right, and note the *mean* of these differences.
3. With the approximate interval and this *mean* difference, as arguments, take out the correction from the table.
4. If the proportional logarithms are *decreasing*, *add* the correction to the approximate time; but if *increasing*, *subtract* it: the result will be the Greenwich mean time.

Example L.—Suppose it were required to find the Greenwich mean astronomical time, at which the *reduced* distance between the Moon and α Aquilæ would be $46^{\circ} 0' 8''$ about May 21st, 1889. It appears, by inspecting the distances, that the *nearest* distance *preceding* it, in order of time, is that on May 21 at *Midnight*; therefore,

Distance at <i>Midnight</i>	45	11	8	and P. L.	-	-	4073
<i>Reduced</i> Distance	-	46	0	8			
Difference	-	-	0	49	0	-	P. L. - - 5651
Approximate Interval	2 ^h	5 ^m	10 ^s	-	-	P. L. - -	1578

The proportional logarithm following the distance in the Ephemeris is 4073, those immediately to the left and right are respectively 4153 and 4003, the differences are therefore 80 and 70, and the *mean* of them, 75.

Opposite to $2^h 5^m 10^s$ (or the quantity nearest to it, $2^h 10^m$), and under 76 in the table, we have for the correction 19', which, *added* to the approximate interval, $2^h 5^m 10^s$, because the proportional logarithms are *decreasing*, gives $2^h 5^m 29^s$, for the true interval after *Midnight*: the Greenwich mean astronomical time is therefore May 21, $14^h 5^m 29^s$. The omission of this correction would produce an error of $4\frac{1}{2}'$ in the Longitude.

It will sometimes happen, that the *mean* difference of the proportional logarithms will exceed the limit of the table of correction; in this case the table may be entered with the approximate interval, and *any fraction* of the difference and the corresponding correction *increased in like proportion*.

Example II.—Suppose it were required to find the Greenwich mean astronomical time, at which the *reduced* distance between the Moon and Fomalhaut would be $26^{\circ} 6' 4''$ about Sept. 6th, 1889. By inspecting the distances, it appears that the nearest preceding is on Sept. 6, at XV^h. ; therefore,

Distance at XV ^h .	26° 59' 33"	and P.L.	- - 3470
<i>Reduced</i> Distance	- 26 6 4		
<hr/>			
Difference - - -	0 53 29	- - P.L.	- - 5271
<hr/>			
Approximate Interval	1 ^h 58 ^m 54 ^s	- - P.L.	- - 1801
<hr/>			

The *mean* difference between the proportional logarithms determined as in the preceding example is 166, one-half of which is 83; under 84 in the table, and opposite $2^h 0^m$, is 23^s : the correction is therefore 46^s to be *subtracted* from the approximate interval, because the proportional logarithms are *increasing*; the Greenwich mean astronomical time is therefore Sept. 6, $16^h 58^m 8^s$. The omission of the correction would produce an error of $11^m 5$ in the Longitude; it may, however, be considered as an extreme case, and such as will seldom be met with.

The proportional logarithms also indicate the star most favourably circumstanced for observation; that star being preferred which has the least proportional logarithm opposite to it; for, the greater the velocity of the Moon from or towards a Star, the greater is the reliance to be placed on an observation of the distance; and as proportional logarithms decrease as their natural numbers increase: a smaller proportional logarithm indicates a greater velocity of the Moon, or a greater variation of distance in the interval, upon which the value of the observation depends. It is not to be inferred from these remarks that observations of any of the distances are to be neglected; on the contrary, every registered star should invariably be observed when possible.

Sun's Co-ordinates. (Pages 218 to 225.)

These pages contain for each Greenwich mean noon and midnight the Sun's true Geocentric Co-ordinates X, Y, Z; X being measured on a line passing through the true vernal Equinoctial point of the date; Y, on a line in the plane of the Equator, in the direction of the first point of Cancer; and Z, perpendicular to the plane of the Equator, towards the North. The Reductions are given for converting the co-ordinates X, Y, Z, referred to the true equinox of the date, into co-ordinates referred to the mean equinox of January 1, 1889.

Apparent Obliquity of the Ecliptic. (Pages 218 to 225.)

These pages contain the Apparent Obliquity of the Ecliptic for each Greenwich mean noon, including the effect of $2 \text{ } \epsilon$.

Planetary Ephemerides at Mean Noon. (Pages 226 to 269.)

These pages contain the Geocentric and Heliocentric places of the Planets, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, and Neptune.

The Geocentric places are the places of the centres of the planets, as they would appear from the centre of the Earth; the Heliocentric, such as they would appear from the centre of the Sun. The Geocentric Right Ascensions and Heliocentric Longitudes are reckoned from the true equinox. The Geocentric Right Ascensions and Declinations are affected with aberration, and are therefore apparent positions.

The "Meridian Passage" is the mean time of the Planet's transit over the meridian of Greenwich. As in the instance of the Moon before noticed, the days on which Mercury and Venus do not pass the meridian, are indicated by asterisks. If we refer to page 228, we shall find that Mercury does not pass over the Greenwich meridian on April 25, and for a similar reason, viz., that the planetary day is longer than the mean solar day, and includes it within its limits.

Another phenomenon takes place in the case of the planets; it is that of two transits on the same day, which arises from the planetary day being sometimes shorter than the solar day, commencing *after* and terminating *before* the solar day. When two transits occur, the times of both are registered, as at page 229, June 19, where it appears that Mercury passes the Greenwich meridian $1^m \cdot 0$ after mean noon of June 19, and again at $23^h 54^m \cdot 7$ on the same day, or $5^m \cdot 3$ before the following Mean Noon.

To find the Right Ascension and Declination of Mercury for any other mean time and place as at 6^h P.M. mean civil time on Jan. 2nd, 1889, in longitude 30° West of Greenwich; also the time of Mercury's passage over this meridian. The difference of longitude 2^h , added (because it is West) to the given time, gives Jan. 2, 8^h for the corresponding Greenwich mean astronomical time.

1. *For the Right Ascension.* The Right Ascension on Jan. 2, is $19^h 6^m 45^s \cdot 58$, and on Jan. 3, it is $19^h 13^m 54^s \cdot 33$; the difference $7^m 8^s \cdot 75$, is the increase of the Right Ascension in 24 mean hours; therefore $24^h : 7^m 8^s \cdot 75 :: 8^h : 2^m 22^s \cdot 92$, the proportional part for 8^h to be added (because the Right Ascensions are increasing) to $19^h 6^m 45^s \cdot 58$, the Right Ascension at Jan. 2, 0^h or noon, gives $19^h 9^m 8^s \cdot 50$ for the Right Ascension required, on the assumption of an invariable first difference; including the effect of second difference, the Right Ascension would be $19^h 9^m 8^s \cdot 46$.

2. *For the Declination.* The Declination on Jan. 2, is S. $24^\circ 33' 5'' \cdot 1$, and on Jan. 3, it is S. $24^\circ 23' 37'' \cdot 5$, the difference, $9' 27'' \cdot 6$, is the decrease in 24 hours; and the proportional part for 8^h is $3' 9'' \cdot 2$, which, subtracted from the Declination at Jan. 2, 0^h or noon, gives S. $24^\circ 29' 55'' \cdot 9$ for the Declination required; the effect of second difference would be to increase this quantity by $10'' \cdot 3$.

3. *For the Meridian Passage.* Take the difference of the times of two consecutive transits; and considering this difference as an acceleration or retardation of the Meridian Passage while the planet has passed over 24^h of geographical longitude, take the proportional part of it, due to the difference of meridians, for a

correction to be applied to the Meridian Passage at Greenwich, bearing in mind that in East longitude the passage precedes that at Greenwich, when times are accelerated, and follows it, when they are retarded; and the contrary in West longitude. In the present case Mercury passes the meridian of Greenwich at Jan. 2, $0^h 17^m \cdot 6$, and again at Jan. 3, $0^h 20^m \cdot 8$, the difference is $3^m \cdot 2$, therefore $24^h : 3^m \cdot 2 :: 2^h : 0^m \cdot 3$, the proportional part to be *added* to $0^h 17^m \cdot 6$, (because the passages are accelerated, and the longitude is West of Greenwich,) which gives Jan. 2, $0^h 17^m \cdot 9$ for the time required.

Planetary Ephemerides at Transit. (Pages 270 to 287.)

These pages contain the Right Ascension and Declination at Transit over the Meridian at Greenwich, within the limits stated in the Preface to the Nautical Almanac for the Year 1861, which are readily reduced (approximately) to the time of transit over any other meridian by means of their Variations in 1 hour of Longitude, except for Mercury, which may be reduced as in the example at *Mean Noon*. These variations apply to the time of transit over the meridian of Greenwich, and therefore require to be reduced to the longitude midway between Greenwich and the place at which the Right Ascension or Declination is required. As they are given at intervals of two transits, or 48 hours of longitude, proceed thus:—If the long. is *East* take the diff. between the given and *preceding* variation—if *West*, between the given and *following* one; in either case as 48^h is to the diff. of variation, so is *half* the longitude in time to the correction required. For the intermediate day add 24^h to *half* the longitude in time. Then prefix the sign — to the Longitude of the proposed meridian if it be East of Greenwich, but + if it be West, and multiply it by the corrected variation; the product will be the reduction for the proposed meridian. *Example:* Suppose the Right Ascension and Declination of Venus were required in longitude 90° or 6^h East, on Jan. 7, 1889. The Right Ascension on Jan. 7 is $22^h 11^m 37^s \cdot 45$ and its “Var. in 1 hour of Long.” $+ 11^s \cdot 11$, which corrected as above is $+ 11^s \cdot 118$: the product of $+ 11^s \cdot 118$ and $- 6^h$ is $- 1^m 6^s \cdot 71$, which, applied to $22^h 11^m 37^s \cdot 45$, the R.A. at Transit at Greenwich, gives $22^h 10^m 30^s \cdot 74$ for that at the place. The Declination on Jan. 7 is S. or $- 12^\circ 47' 45'' \cdot 0$, and its variation $+ 68'' \cdot 6$, which corrected as above is $+ 68'' \cdot 51$, and the product of $+ 68'' \cdot 51$ and $- 6^h$ is $- 6' 51'' \cdot 1$, which applied to S. or $- 12^\circ 47' 45'' \cdot 0$, gives S. $12^\circ 54' 36'' \cdot 1$ for the Declination. Had the day been Jan. 6, the corrected variation of the Right Ascension would have been $+ 11^s \cdot 183$, and that of the Declination, $+ 67'' \cdot 76$.

The “Sid. Time of Sem. pass. Mer.” (Sidereal Time of the Semidiameter passing the Meridian,) serves to reduce an observation of the Right Ascension of the limb, to that of the centre, the “Semidiameter” a similar purpose for the Declination, and the “Hor. Par.” (Horizontal Parallax) for reducing an observation to the centre of the earth.

Stars. (Pages 288 to 364.)

In pages 288 to 291 are the Mean Right Ascensions and Declinations of 197 Stars for Jan. 0— $0^d \cdot 351$, 1889 and their Annual Variations. North Declination is denoted by + and South Declination by —.

The Logarithms A, B, C, D, pp. 293 to 300, and "Quantities for correcting the places of Stars," pp. 301 to 308, have been computed by Bessel's formulæ with the coefficients of Peters, p. 292, omitting in C and D the terms $-0.00405 \sin 2 \zeta$ and $-0.00885 \cos 2 \zeta$: the logarithms of E, F, G, H and the value of L, by the formulæ in the introduction to the Greenwich Twelve-year Catalogue (Volume of Greenwich Observations for the year 1847).

The Apparent Places of α Ursæ Minoris, Cephei 51 (Hev), δ Ursæ Minoris, ϵ Octantis, and λ Ursæ Minoris are given for every day of the year and are corrected for the terms which involve 2ζ . Those of the remaining 192 Stars are given for every *tenth* day.

The hours and minutes of Right Ascension, and the degrees and minutes of Declination, are placed at the heads of the columns as constants, and belong equally to all the numbers below them. This arrangement has rendered it necessary, in numerous instances, to continue the seconds beyond 60, as the width of the page would not permit of otherwise indicating any change in the minutes. Thus, the apparent Right Ascension of γ Hydri at page 323, on Sept. 28, 1889, is registered $3^h 48^m 60.29$, and is to be read $3^h 49^m 0.29$.

The small figures on the right are the differences of the Right Ascension and Declination in 10 days, and serve to find the values for an intermediate day. As in the case of the Planets before explained, a Star will sometimes arrive at the meridian twice in one apparent solar day. When this occurs on one of the given dates, the Star's place is registered for each transit as at page 322, for α Persei on May 11; but in other cases the day of the month on which two transits occur is placed opposite to the interval. In these particular instances the Star passes the meridian 11 times in the 10 apparent solar days, and consequently the Right Ascension or Declination at transit on any intermediate day is to be determined by taking $\frac{1}{11}$ th part, instead of $\frac{1}{10}$ th, of the variation in the interval. Thus, at page 320, we find in the instance of β Arietis the figures 18 opposite the interval between April 11 and April 21, indicating that the double transit occurs on April 18, and a difference of 0.07 opposite to the interval between the seconds belonging to those dates, $\frac{1}{11}$ of which is $.006$; for the first transit on April 18, we should therefore multiply $.006$, by the days elapsed since April 11, but for the second transit on April 18 and following transits by the days elapsed increased by 1.

A correction of the Right Ascension for *daily* aberration is necessary where extreme accuracy is required, of $+0.0206 \cos \phi \sec \delta$ for the upper transit and $-0.0206 \cos \phi \sec \delta$ for the lower transit, ϕ denoting the Latitude of the place, and δ the Declination of the Star.

Moon-Culminating Stars. (Pages 365 to 394.)

Those Stars are denominated Moon-Culminating Stars, which, being near the Moon's parallel of Declination, and not differing much from her in Right Ascension, are proper to be observed with the Moon, in order to determine differences of meridians. This is effected by comparing the differences of the observed Right Ascensions of such a Star and the Moon's bright limb at any two meridians. If the Moon had no motion, the difference of her Right Ascension from that of the Star would be constant at all meridians; but in the interval of her transit over two different meridians, her Right Ascension will have varied, and the difference between the two compared differences will exhibit the amount of this variation, which added to the differences

of the meridians, shows the angle through which the westerly meridian must revolve before it comes up with the Moon; hence, and knowing the rate of her increase in Right Ascension, the difference of Longitude may be easily obtained.

The Right Ascension of the Moon's bright limb and Declination of her centre, at the instant of their respective transits at Greenwich, are given for the lower as well as the upper Culmination, *L.* denoting the Lower Culmination, and *U.* the Upper Culmination; the Roman numerals indicate the *bright* limb of the Moon. The Moon's age at the upper transit is inserted in the column containing the magnitudes of the Stars.

The numbers in the column "*Var. of ζ 's R.A. in one hour of Long.*" represent the Variation in Right Ascension of the Moon's Limb during the interval of her transit over two meridians, equidistant from that of Greenwich, and *one* hour distant from each other. They have been deduced from the Right Ascensions of the *bright limb*, and therefore include the effect produced by the change of the semidiameter. They serve to determine the Longitude where the difference of meridians is not great; but where this difference is considerable that variation in Right Ascension should be used which corresponds to the middle of the interval between the observations. They also serve to determine (approximately) the Right Ascension of the bright limb at its transit over any other meridian. Thus: Multiply the difference of longitude between Greenwich and the given meridian, by the variation; and, according as the given meridian is East or West of Greenwich, subtract or add the product to the Right Ascension at Greenwich; the result will be the Right Ascension of the bright limb at transit over the proposed meridian. *Example:* On Jan. 16, 1889, the Right Ascension of the Moon's first limb is $7^h 44^m 43^s.40$, at its upper transit at Greenwich, and the variation in 1 hour of longitude is $136''.76$: Required the Right Ascension of the limb at its upper transit at Paris. Paris is $9^m 21^s.0$, or $0^h.156$, East of Greenwich; therefore, multiplying $136''.76$ by 0.156 , and subtracting the product, $21''.33$, we have $7^h 44^m 22^s.07$, for the Right Ascension at Paris.

In a similar manner the Declination may be approximately determined at transit over any meridian not far distant from Greenwich, bearing in mind that South Declinations and East Longitudes are to be considered as *negative*. Thus, in the above *Example*: The Moon's Declination at her upper transit at Greenwich is $N. 21^\circ 31' 41''.5$ and the "*Var. of ζ 's Dec. in 1 hour of Long.*" is $-164''.7$, which, multiplied by -0.156 , gives $+25''.7$; or $+21^\circ 32' 7''.2$, for the Declination at the upper transit at Paris.

The numbers in the column entitled "*Sid. Time of Sem. pass. Mer.*" express the Sidereal intervals which the Moon's Semidiameter, at the time of transit at Greenwich, takes in passing the meridian, and therefore serve to determine the Transit of the centre from an observed Transit of either limb, the "*Semidiameter*" a similar purpose for the Declination, and the "*Hor. Par.*," or Horizontal Parallax, for reducing an observation to the centre of the Earth.

Eclipses. (Pages 395 to 402.)

In these pages are given the particulars necessary for indicating the times, places, &c. on the Earth where the Eclipses of the Sun and Moon will be visible, and the Elements which have been used in the calculations.

Elements of Occultations. (Pages 403 to 438.)

These are:—1. The Greenwich Mean Time at which the Moon would, if viewed from the centre of the Earth, appear to have the same Right Ascension as the Star.

2. The *Apparent* places, at Greenwich Mean Midnight, of Stars not less than magnitude $6\frac{1}{2}$, the occultations of which will be visible at *some* part of the Earth.

3. The difference of Declination and Position of the Moon, as it would appear with respect to the Star at the instant of conjunction in Right Ascension.

4. The Limits of Latitude *beyond* which the Star *cannot* be occulted by the Moon. They also indicate whether at a given conjunction of a Star with the Moon, the positions are likely to produce an occultation in a given Latitude.

These Elements being referred to the Moon and Star, as seen from the centre of the Earth, are independent of geographical position, and serve equally for all places. It is only necessary to apply the difference of longitude from Greenwich to the Greenwich Mean Time of conjunction to find the time of conjunction at any other meridian; and it is this time to which the positions of the Moon and Star here given will equally correspond.

Suppose an observer situate at a star, and having the Moon between him and the Earth, and that he could see the Moon projected on the Earth's disc; he would observe it moving across the disc from West to East, covering a zone whose breadth would be equal to the apparent diameter of the Moon. Now it is only within the limits of this zone that the Occultation of a Star by the Moon can take place. To all the places through which the boundary lines pass, the Star will appear just to touch the Moon's limb; and that projected parallel of latitude, to which one of the boundary lines is a tangent, is one of the limiting parallels, while the intersection of the other boundary line with the circumference of the Earth's disc determines the other limiting parallel.

Occultations. (Pages 439 to 441.)

These pages contain a list of those Stars the Occultations of which by the Moon are visible at Greenwich, with the Sidereal and Mean Times of the disappearance and reappearance, and the points on the circumference of the Moon's image, where the Star, viewed with a telescope that inverts, will disappear and reappear. By "Angle from N. Point" is to be understood the arc included between the Star, when in contact, and the point of intersection of the limb with a circle passing through the North Pole and the centre of the Moon's image; and by "Angle from Vertex," the arc between the Star at contact, and the point where a circle, passing through the zenith and the Moon's centre, intersects the limb. The angles from vertex are useful in observing Occultations with a telescope not mounted equatorially; and to enable the observer to direct his attention to the point of the Moon's limb where the Star will reappear. In some instances Occultations have been inserted, which taking place in, or near to, the horizon of Greenwich, may be visible at places not far distant from Greenwich.

Jupiter's Satellites, Eclipses, Occultations, &c. (Pages 442 to 465.)

These pages contain the Greenwich Mean Times of the Eclipses, Occultations, Transits, and Transits of Shadows of the Satellites of Jupiter. "Ec. D." denotes the disappearance of the Satellite into the shadow of Jupiter; and "Ec. R." its reappearance out of the shadow. They generally happen when the Satellite is apparently at some distance from Jupiter, except near the opposition of Jupiter to the Sun, when the eclipse takes place near to the planet. The disappearances and reappearances happen on the Western side of the planet before opposition, but afterwards on the Eastern side: with an inverting telescope, the appearances will be the contrary. Before the opposition, the disappearances only of the first Satellite are visible: and after the opposition, the reappearances only. The disappearance and reappearance of the second Satellite can seldom be observed at the same Eclipse: but both phenomena are generally visible with the third and fourth Satellites. "Oc. D." denotes the disappearance of the Satellite behind the disc of Jupiter, and "Oc. R." its reappearance; "Tr. I." the ingress or beginning of a transit of a Satellite across the disc of Jupiter; and "Tr. E." its egress or termination; "Sh. I." the ingress of a transit of the shadow of a Satellite across the disc of Jupiter; and "Sh. E." its egress. The times of Occultation and Transit are only approximate.

The Eclipses, Occultations, &c. visible at Greenwich are marked with an asterisk when Jupiter is more than 8° above, and the Sun more than 8° below the horizon of Greenwich, and with a dagger when Jupiter is nearer the horizon, as under favourable circumstances they may be observed.

To find the time of the disappearance or reappearance for any other place, it is only necessary to *add* the difference of longitude (*in time*) if it be *East* of Greenwich, or to *subtract* it if *West*: Jupiter, however, may be below the horizon at this time, or the intensity of sun-light, or the brightness of twilight, may render the Satellites invisible: it is therefore necessary to ascertain the position of the Sun and Jupiter, with respect to the horizon; this may be accomplished by means of a celestial globe, or by finding their times of rising and setting.

Phases of the Eclipses. These diagrams exhibit the position of each Satellite with respect to the disc of the Planet at the moment of disappearance or reappearance, as it will appear in an inverting telescope; they have been laid down from calculations made for the eclipse nearest to the middle of each month, and serve very well for the whole of the month *except near opposition*, the change in the position of Jupiter and his Shadow in the interval being too small to be appreciable.

The Tables of Configurations represent, at a given hour after *Mean Noon* of each day of the Month, the relative positions of the images of Jupiter and his Satellites, as they would appear (disregarding their latitudes) in an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the page; the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to distinguish the Satellites; and their positions indicate the directions of the Satellites' motions, which are *towards the numerals*. When a Satellite is at its greatest elongation, the point is placed above or below the centre of the numeral. A white circle (○) denotes that the Satellite is *on* the disc of Jupiter,

and a black circle (●) that it is either *behind* the disc, or in the shadow, of Jupiter. When two Satellites are in or near conjunction, they are placed one above the other, merely to distinguish them in their relation of *upper* and *lower*, without regard to their actual latitudes.

The Satellites are in the superior parts of their orbits, or have Jupiter between them and the Earth, when they are moving from West to East; and in the inferior parts of their orbits, or between the Earth and Jupiter, when moving from East to West: in the former case Eclipses and Occultations occur, and in the latter Transits of the Satellites and their Shadows.

If an inverting telescope be directed towards Jupiter on July 12, 1889, at 10^h 30^m mean time, the Satellites will appear to an observer at Greenwich in the positions as laid down in the table. The 1st and 3rd Satellites, which are *really* to the left of the planet, will appear to the right of it; and the 2nd and 4th, which are *really* to the right, will appear to be to the left.

West and *East*, at the head of the page, are inserted to show the positions of the Satellites with respect to Jupiter, as they would appear in a telescope that does *not* invert. Jupiter being always to the south of the zenith of Greenwich, the Satellites which are here laid down on the left of Jupiter would appear to the *West*, and those on the right-hand to the *East* of the planet.

As the Configurations are given for *mean astronomical time*, which agrees with *civil time* only from 0^h to 12^h, or from noon to midnight, when the time exceeds 12^h the excess will indicate the civil time of the following day. Thus in January, 1889, the Configurations are given for 19^h mean time, but the 19th hour from noon is the same as the 7th hour past the following midnight. The Configurations for January 2, 19^h, therefore relate to 7^h A.M. on January the 3rd.

Phenomena. (Pages 466 and 467.)

In these pages are given the approximate times of the conjunctions in Right Ascension of the Planets with the Moon and with each other, and the conjunctions in Right Ascension of the Planets with certain Stars; also the times when the Planets are in those parts of their orbits most favourable for observation, with a view to the more accurate determination of their elements; and other notices, chiefly of use to the astronomer.

Saturn's Ring, &c. (Page 468.)

In this page are given the quantities which enable us to determine the position of the Ring of Saturn at intervals of 20 days throughout the year, and whether it be visible or not. The value of *p* shows the position of the minor axis of the Ring with respect to a circle of declination, those of *a'*, *b'*, *a''*, *b''*, the Ring's apparent magnitude, and a comparison of those of *l* and *l'*, its visibility or otherwise. For the plane of the Ring to be *visible*, it is necessary that the Sun and the Earth should be elevated on the same side of it, which is the case throughout 1889. The circumstances which determine the *invisibility* of the Ring are, 1st, when its plane passes through the centre of the Sun, or *l' = 0*; 2nd, when it passes through the centre of the Earth, or *l = 0*, and at this time *b'* and *b''*, also = 0; 3rd, when the Sun and Earth are on different sides of the plane of the Ring, for the Earth in this case will have the unilluminated side of the Ring turned towards it.

In this page is also the illuminated portion of the discs of Venus and Mars.

Moon's Libration, &c. (Page 469.)

Page 469 contains the data for facilitating the computation of the *Libration in Longitude and Latitude* at any time required. See NAUTICAL ALMANACS 1867-1869, PREFACE, page x.

Tides. (Pages 470 to 473.)

The Mean Time of High Water at London Bridge is here given for every day of the year, on the assumption that the time of high water on full and change days, or the *Establishment of the Port*, is $1^h 58^m$. The first high tide which happens after Mean Noon of any day is inserted in the 1st column, and the second in the 2nd column. Where a line (—) is inserted, it indicates that there is only *one* high tide on that astronomical day. Thus on January 13 there is only one high tide; it occurs at $11^h 52^m$, but the succeeding high tide does not take place until 19^m after mean noon of January 14.

The times of high water at full and change of the Moon, as given at pages 472 and 473, are reckoned from *Apparent Noon*: they represent the *Establishments of the Ports*, that is, the *actual times* of High Water *when the Moon passes the meridian at the same time as the Sun*; or the *intervals* between the times of Transit of the Moon and the times of High Water *on full and change days*. They serve to determine approximately the time of high water on any other day at those places in the usual manner.

This Table is occasionally revised by the Admiralty Hydrographic Office.

Tables. (Pages 474 to 483.)

Pages 474 and 475 contain a Table of quantities used in computing the Moon's Libration. See NAUTICAL ALMANACS 1867-1869, PREFACE, page x.

In page 476 is given a Table of the Correction required on account of Second Differences in finding the Greenwich Time corresponding to a reduced Lunar Distance—the use of this Table has been explained, by the Examples given at pages 500 and 501.

In pages 477 to 479 are given Tables for determining the Latitude by Observations of the Pole Star out of the Meridian. The method of using them is as follows :—

From the observed altitude, when corrected for the error of the instrument, refraction, and dip of the horizon, subtract $1'$.

Reduce the Mean Time of Observation at the place to the corresponding Sidereal Time, by the Table given at page 480.

With the Sidereal Time found, take out the *first correction*, with its proper sign. If the sign be +, the correction must be *added* to the reduced altitude; but if it be —, it must be *subtracted*; the result will give an Approximate Latitude.

With the Altitude and Sidereal Time of observation, take out the *second correction*; and with the day of the month and the same Sidereal time, take out the *third correction*. These two corrections *added* to the Approximate Latitude, will give the Latitude of the place.

EXPLANATION.

Example. On March 6th, 1889, in Longitude 37° W. at $7^{\text{h}} 43^{\text{m}} 35^{\text{s}}$ P.M. Mean civil Time, suppose the altitude of the Pole Star, when corrected for the error of the instrument, refraction, and dip of the horizon, to be $46^{\circ} 17' 28''$: Required the Latitude.

Mean Time	- - - - -	^h 7 ^m 43 ^s 35
Diff. Long. (37°) in time	- - - - -	2 28 0
Greenwich Mean Time	- - - - -	10 11 35
Sidereal Time at Greenwich Mean Noon	- - - - -	^h 22 ^m 57 ^s 38
Mean Time at Place	- - - - -	7 43 35
Acceleration (Tab. page 480) for $10^{\text{h}} 12^{\text{m}}$	- - - - -	1 41
Sidereal Time of Observation	- - - - -	6 42 54
Corrected Altitude	- - - - -	[°] 46 ['] 17 ["] 28
Subtract	- - - - -	1 0
Reduced Altitude	- - - - -	46 16 28
With Argument $6^{\text{h}} 42^{\text{m}} 54^{\text{s}}$, First Correction	- - - - -	- 11 45
Approximate Latitude	- - - - -	46 4 43
Arguments, $46^{\circ} 17'$	} Second Correction	+0 53
$6^{\text{h}} 43^{\text{m}}$		
Arguments, March 6, 1889.	} Third Correction	+1 12
$6^{\text{h}} 43^{\text{m}}$		
Latitude of the place	- - -	N. 46 6 48

The *Tables of Time Equivalents*, given at pages 480 to 483, are for converting Mean Time into Sidereal Time, and Sidereal into Mean Time. They will serve also for Tables of Acceleration and Retardation, by taking the difference between each argument and its equivalent. Thus, in the Table at pages 480 and 481, the *excess* of the sidereal time equivalents above the arguments of mean time shows the *acceleration* of sidereal on mean solar intervals; and in the Table at pages 482 and 483, the *defect* of the mean time equivalents, as compared with the arguments of sidereal time, indicates the *retardation* of mean on sidereal intervals.

Day of the Year. (Pages 484 and 485.)

The numbers in these columns indicate the complete days at mean noon which have elapsed since mean noon of January 1. Mean noon of January 1 is therefore reckoned 0, and 1 is found opposite to that of January 2, because at that instant one entire day has elapsed.

Fraction of the Year. (Pages 484 and 485.)

These fractions are the quotients found by dividing the numbers in the preceding column by 365.242 . The day and fraction of the year are useful in many astronomical calculations.

Days elapsed of the Julian Period at Mean Noon. (Page 486.)

The principal use of this Table is in determining the interval in days between two epochs, which is frequently required in astronomical calculations.

Required the day of the Julian period for 1888, February 1, and March 1; and 1890, January 30.

1888, Feb. 1 and Mar. 1.

2410638

31 (p. 484)

2410669 Feb. 1.

28

1

2410698 Mar. 1.

1890, Jan. 30.

2410638

366

365

29 (p. 484)

2411398

The concluding pages, 487 to 489, contain a revised list of the *Latitudes and Longitudes of the principal Public and Private Observatories.*

APPENDIX
TO
THE NAUTICAL ALMANAC
FOR THE YEAR
1889;
CONTAINING
ELEMENTS AND EPHEMERIDES
OF
CERES, PALLAS, JUNO, AND VESTA,
AND
THE CORRECTIONS, ACCORDING TO NEWCOMB,
TO THE
MOON'S LONGITUDES AND LATITUDES
FROM
HANSEN'S TABLES.

ELEMENTS.

	① CERES. 1889, Jan. 10 ^o M. T. at Green ^b .	② PALLAS. 1888, Dec. 5 ^o M. T. at Green ^b .	③ JUNO. 1889, Mar. 23 ^o M. T. at Green ^b .	④ VESTA. 1888, Sept. 24 ^o M. T. at Green ^b .
α	122 2 36.2	88 42 26.5	155 1 55.9	356 25 54.7
ω	148 1 22.7	122 3 23.0	55 15 44.3	251 32 30.6
γ	80 50 42.8	172 48 21.1	170 42 49.8	103 31 41.3
δ	10 36 52.9	34 43 49.2	13 1 55.5	7 8 24.0
ϕ	4 30 55.9	13 54 43.8	14 50 35.6	5 4 15.1
π	770.85554	770.08825	814.05811	977.73356
log. a	0.4420224	0.4423107	0.4262341	0.3731907
δ	1889, Jan. 18.	1888, Nov. 23.	1889, Mar. 20.	1888, Sept. 29.
	GODWARD. <i>Monthly Notices of the Roy. Ast. Soc., Vol. 38, p. 119.</i>	FARLEY. <i>Supplement to Nautical Almanac, 1860.</i>	HIND. <i>Supplement to Nautical Almanac, 1859.</i>	FARLEY. <i>Supplement to Nautical Almanac 1860.</i>
With perturbations by Venus, the Earth, Mars, Jupiter, and Saturn.				

The Longitudes are reckoned from the Mean Equinoxes of the respective Epochs.

① CERES, 1889.

MEAN TIME.

Month and Day.	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1888. Dec. 23	^h 8 ^m 37 ^s 5	N. 27° 26'	0.2319	^h 14 ^m 25 ^s 0	112° 50'	N. 5° 40'	0.4121
1889. Jan. 4	8 29.9	28 59	0.2132	13 30.1	115 46	6 8	0.4112
16	8 19.1	30 29	0.2042	12 32.1	118 43	6 34	0.4104
28	8 7.2	31 42	0.2060	11 33.1	121 40	6 59	0.4096
Feb. 9	7 56.5	32 30	0.2182	10 35.3	124 39	7 24	0.4089
21	7 49.0	32 50	0.2387	9 40.8	127 38	7 47	0.4083
Mar. 5	7 45.8	32 46	0.2647	8 50.7	130 38	8 9	0.4078
17	7 47.4	32 25	0.2936	8 5.2	133 39	8 30	0.4074
29	7 53.2	31 49	0.3234	7 23.9	136 40	8 49	0.4070
Apr. 10	8 2.6	31 1	0.3526	6 46.1	139 43	9 7	0.4067
22	8 15.0	30 4	0.3804	6 11.3	142 45	9 23	0.4065
May 4	8 29.7	28 57	0.4063	5 38.8	145 48	9 38	0.4064
16	8 46.1	27 40	0.4301	5 8.0	148 51	9 52	0.4064
28	9 3.7	26 14	0.4517	4 38.4	151 55	10 3	0.4065
June 9	9 22.3	24 39	0.4711	4 9.7	154 58	10 13	0.4067
21	9 41.4	22 56	0.4883	3 41.6	158 2	10 21	0.4069
July 3	10 1.0	21 4	0.5034	3 13.9	161 6	10 28	0.4072
15	10 20.8	19 6	0.5164	2 46.5	164 9	10 33	0.4076
27	10 40.8	17 2	0.5273	2 19.1	167 12	10 36	0.4082
Aug. 8	11 0.8	14 53	0.5363	1 51.8	170 14	10 37	0.4088
20	11 20.8	12 41	0.5434	1 24.6	173 16	10 36	0.4095
Sept. 1	11 40.8	10 26	0.5485	0 57.4	176 17	10 34	0.4102
13	12 0.8	8 11	0.5517	0 30.1	179 18	10 30	0.4110
25	12 20.7	5 56	0.5529	0 2.7	182 18	10 24	0.4119
Oct. 7	12 40.6	3 44	0.5521	23 33.1	185 17	10 17	0.4128
19	13 0.4	N. 1 35	0.5493	23 5.6	188 15	10 8	0.4138
31	13 20.1	S. 0 29	0.5444	22 38.0	191 12	9 58	0.4149
Nov. 12	13 39.6	2 27	0.5373	22 10.3	194 8	9 46	0.4161
24	13 58.9	4 16	0.5280	21 42.3	197 3	9 33	0.4173
Dec. 6	14 17.9	5 57	0.5164	21 13.9	199 56	9 18	0.4185
18	14 36.4	7 27	0.5025	20 45.1	202 48	9 2	0.4198
30	14 54.2	8 47	0.4862	20 15.6	205 39	8 45	0.4211
42	15 11.0	S. 9 55	0.4675	19 45.2	208 29	N. 8 27	0.4225

② CERES, 1889.

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
Jan. 1	h m s 8 31 44.66	h m s 8 31 0.19	- 1.82	N. 28 40 9.6	N. 28 47 59.3	+ 19.6	5.4
3	8 30 14.33	8 29 27.13	1.94	28 55 48.4	29 3 36.4	19.5	5.4
5	8 28 38.65	8 27 48.94	2.05	29 11 22.8	29 19 7.0	19.4	5.4
7	8 26 38.07	8 26 6.09	2.14	29 26 48.7	29 34 27.1	19.2	5.5
9	8 25 13.06	8 24 19.06	- 2.23	N. 29 42 1.9	N. 29 49 32.6	+ 18.9	5.5
11	8 23 24.17	8 22 28.44	2.30	29 56 58.5	30 4 19.3	18.5	5.5
13	8 21 31.94	8 20 34.76	2.37	30 11 34.5	30 18 43.7	18.0	5.5
15	8 19 36.96	8 18 38.62	2.42	30 23 46.4	30 31 42.1	17.5	5.5
17	8 17 39.82	8 16 40.65	- 2.46	N. 30 39 30.5	N. 30 46 11.2	+ 16.9	5.5
19	8 15 41.17	8 14 41.46	2.48	30 52 43.7	30 59 7.8	16.2	5.5
21	8 13 41.61	8 12 41.69	2.49	31 3 23.1	31 11 29.2	15.4	5.5
23	8 11 41.80	8 10 42.01	2.49	31 17 25.8	31 23 12.6	14.7	5.5
25	8 9 42.42	8 8 43.10	- 2.48	N. 31 28 49.3	N. 31 34 15.7	+ 13.8	5.5
27	8 7 44.16	8 6 45.66	2.45	31 39 31.3	31 44 36.5	12.9	5.5
29	8 5 47.69	8 4 50.35	2.40	31 49 30.4	31 54 13.1	12.0	5.5
31	8 3 53.71	8 2 57.86	2.34	31 58 44.5	32 3 4.5	11.1	5.5
Feb. 2	8 2 2.88	8 1 8.84	- 2.27	N. 32 7 12.9	N. 32 11 9.7	+ 10.1	5.5
4	8 0 15.84	7 59 23.93	2.19	32 14 54.8	32 18 28.3	9.1	5.4
6	7 58 33.18	7 57 43.65	2.09	32 21 50.1	32 25 0.3	8.2	5.4
8	7 56 55.40	7 56 8.50	1.98	32 27 58.9	32 30 46.0	7.2	5.4
10	7 55 23.02	7 54 38.99	- 1.86	N. 32 33 21.6	N. 32 35 45.9	+ 6.2	5.3
12	7 53 56.46	7 53 15.48	1.74	32 37 58.9	32 40 0.8	5.3	5.3
14	7 52 36.10	7 51 58.36	1.61	32 41 51.8	32 43 31.9	4.4	5.3
16	7 51 22.28	7 50 47.91	1.47	32 45 1.3	32 46 20.1	3.5	5.2
18	7 50 15.28	7 49 44.41	- 1.32	N. 32 47 28.6	N. 32 48 26.9	+ 2.6	5.2
20	7 49 15.33	7 48 48.08	1.17	32 49 15.0	32 49 53.3	1.8	5.1
22	7 48 22.66	7 47 59.11	1.02	32 50 21.9	32 50 41.0	1.0	5.1
24	7 47 37.44	7 47 17.68	0.86	32 50 50.7	32 50 51.2	+ 0.2	5.0
26	7 46 59.85	7 46 43.95	- 0.70	N. 32 50 44.8	N. 32 50 25.5	- 0.5	5.0
28	7 46 30.00	7 46 18.01	0.54	32 49 59.5	32 49 25.1	1.3	4.9
Mar. 2	7 46 7.97	7 45 59.90	0.38	32 48 42.5	32 47 51.8	1.9	4.9
4	7 45 53.79	7 45 49.64	0.21	32 46 53.2	32 45 46.9	2.6	4.8
6	7 45 47.44	7 45 47.20	+ 0.05	N. 32 44 33.2	N. 32 43 12.2	- 3.2	4.8
8	7 45 48.89	7 45 52.50	+ 0.11	32 41 44.0	32 40 8.9	3.8	4.7
10	7 45 58.02	7 46 5.46	0.27	32 38 27.0	32 36 38.4	4.4	4.7
12	7 46 14.79	7 46 25.97	0.43	32 34 43.4	32 32 42.1	4.9	4.6
14	7 46 39.00	7 46 53.86	+ 0.58	N. 32 30 34.6	N. 32 28 21.0	- 5.4	4.6
16	7 47 10.54	7 47 29.00	0.73	32 26 1.5	32 23 36.2	5.9	4.5
18	7 47 49.22	7 48 11.18	0.88	32 21 5.3	32 18 28.8	6.4	4.5
20	7 48 34.87	7 49 0.26	1.02	32 15 46.8	32 12 59.4	6.9	4.4
22	7 49 27.34	7 49 56.08	+ 1.16	N. 32 10 6.7	N. 32 7 8.8	- 7.3	4.4
24	7 50 26.46	7 50 58.47	1.30	32 4 5.8	32 0 57.8	7.7	4.3
26	7 51 32.07	7 52 7.25	1.43	31 57 44.7	31 54 26.7	8.1	4.3
28	7 52 44.00	7 53 22.28	+ 1.56	N. 31 51 3.9	N. 31 47 36.4	- 8.5	4.2

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
	h m s	h m s	s	° ' "	° ' "	"	"
Mar. 30	7 54 20.08	7 54 43.37	+ 1.69	N.31 44 4.1	N.31 40 27.1	- 8.9	4.2
Apr. 1	7 55 26.13	7 56 10.33	1.81	31 36 45.6	31 32 59.5	9.3	4.1
3	7 56 55.95	7 57 42.95	1.93	31 29 8.9	31 25 13.9	9.7	4.1
6	7 58 31.32	7 59 21.03	2.04	31 21 14.5	31 17 10.8	10.1	4.0
7	8 0 12.05	8 1 4.96	+ 2.15	N.31 13 2.7	N.31 8 50.4	- 10.4	4.0
9	8 1 57.92	8 2 52.72	2.26	31 4 23.8	31 0 13.1	10.8	4.0
12	8 3 48.72	8 4 45.91	2.36	30 55 48.2	30 51 19.2	11.1	3.9
16	8 5 44.26	8 6 43.73	2.45	30 46 46.0	30 42 8.8	11.5	3.9
15	8 7 44.31	8 8 45.98	+ 2.55	N.30 37 27.5	N.30 32 42.1	- 11.8	3.8
17	8 9 48.70	8 10 52.45	2.63	30 27 52.6	30 22 59.1	12.1	3.8
19	8 11 57.23	8 13 1.01	2.72	30 18 1.5	30 12 59.9	12.5	3.7
21	8 14 9.76	8 15 17.48	2.80	30 7 54.2	30 3 44.5	12.8	3.7
23	8 16 26.14	8 17 35.72	+ 2.88	N.29 57 30.7	N.29 52 12.9	- 13.2	3.7
25	8 18 46.20	8 19 57.57	+ 2.96	N.29 46 51.1	N.29 41 25.2	- 13.5	3.6

MEAN TIME.

Month and Day.	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1888.	^h ^m	[°] [']		^h ^m	[°] [']	[°] [']	
Dec. 23	4 18.1	S. 31 57	0.2045	10 6.4	72 50	S. 34 19	0.3511
1889.							
Jan. 4	4 12.6	30 12	0.2156	9 13.8	77 28	34 37	0.3468
16	4 11.4	27 39	0.2296	8 25.6	82 13	34 44	0.3428
28	4 14.7	24 31	0.2455	7 41.8	87 3	34 39	0.3391
Feb. 9	4 22.3	21 5	0.2627	7 2.3	91 57	34 23	0.3356
21	4 33.7	17 30	0.2807	6 26.6	96 52	33 55	0.3326
Mar. 5	4 48.4	13 57	0.2990	5 54.0	101 48	33 15	0.3299
17	5 5.8	10 32	0.3175	5 24.2	106 41	32 22	0.3276
29	5 25.4	7 20	0.3360	4 56.6	111 31	31 18	0.3258
Apr. 10	5 46.9	4 27	0.3542	4 30.9	116 16	30 3	0.3243
22	6 9.9	S. 1 54	0.3722	4 6.6	120 55	28 37	0.3234
May 4	6 34.1	N. 0 16	0.3897	3 43.5	125 27	27 1	0.3229
16	6 59.1	2 1	0.4066	3 21.3	129 52	25 17	0.3229
28	7 24.7	3 23	0.4227	2 59.6	134 8	23 25	0.3234
June 9	7 50.6	4 22	0.4378	2 38.3	138 16	21 27	0.3244
21	8 16.7	4 59	0.4519	2 17.0	142 16	19 24	0.3258
July 3	8 42.7	5 15	0.4648	1 55.7	146 9	17 17	0.3277
15	9 8.5	5 14	0.4762	1 34.2	149 54	15 6	0.3299
27	9 34.0	4 57	0.4862	1 12.5	153 31	12 54	0.3326
Aug. 8	9 59.1	4 27	0.4945	0 50.3	157 2	10 40	0.3357
20	10 23.9	3 47	0.5011	0 27.8	160 27	8 26	0.3391
Sept. 1	10 48.3	3 0	0.5058	0 5.0	163 46	6 13	0.3428
13	11 12.3	2 7	0.5085	23 39.7	167 0	4 0	0.3469
25	11 35.9	1 13	0.5092	23 16.0	170 10	S. 1 50	0.3511
Oct. 7	11 59.2	N. 0 20	0.5078	22 51.9	173 15	N. 0 18	0.3556
19	12 22.0	S. 0 30	0.5042	22 27.5	176 16	2 24	0.3603
31	12 44.5	1 14	0.4982	22 2.7	179 14	4 26	0.3651
Nov. 12	13 6.5	1 48	0.4900	21 37.3	182 9	6 25	0.3701
24	13 27.9	2 10	0.4794	21 11.5	185 1	8 21	0.3752
Dec. 6	13 48.8	2 17	0.4665	20 45.0	187 51	10 12	0.3803
18	14 8.8	2 5	0.4512	20 17.7	190 39	12 0	0.3855
30	14 27.8	1 32	0.4338	19 49.3	193 25	13 43	0.3908
42	14 45.5	S. 0 34	0.4143	19 19.6	196 9	N. 15 22	0.3960

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AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
Jan. 1	h m s 4 13 24.92	h m s 4 13 3.71	— 0.92	S. 30 39 59.3	o ' " S. 30 29 47.0	" +25.1	" 5.4
3	4 12 44.30	4 12 26.72	0.77	30 19 13.1	30 8 18.3	26.8	5.4
5	4 12 11.00	4 11 57.14	0.62	29 57 3.1	29 45 28.2	28.5	5.4
7	4 11 45.15	4 11 35.06	0.46	29 33 34.1	29 21 21.5	30.1	5.3
9	4 11 26.86	4 11 20.56	— 0.30	S. 29 8 50.9	S. 28 56 2.8	+31.6	5.3
11	4 11 16.19	4 11 13.71	— 0.14	28 42 58.0	28 29 36.9	33.0	5.3
13	4 11 13.15	4 11 14.49	+ 0.02	28 16 0.1	28 2 8.0	34.4	5.3
15	4 11 17.72	4 11 22.84	0.17	27 48 1.4	27 33 40.6	35.6	5.2
17	4 11 29.87	4 11 38.78	+ 0.33	S. 27 19 6.4	S. 27 4 19.1	+36.7	5.2
19	4 11 49.58	4 12 2.25	0.49	26 49 19.3	26 34 7.4	37.7	5.2
21	4 12 16.78	4 12 33.16	0.64	26 18 43.8	26 3 9.1	38.7	5.1
23	4 12 51.39	4 13 11.45	0.80	25 47 23.8	25 31 28.2	39.6	5.1
25	4 13 33.34	4 13 57.05	+ 0.95	S. 25 15 22.8	S. 24 59 8.0	+40.4	5.1
27	4 14 22.56	4 14 49.86	1.10	24 42 44.3	24 26 12.3	41.2	5.0
29	4 15 18.96	4 15 49.82	1.25	24 9 32.2	23 52 44.6	41.8	5.0
31	4 16 22.45	4 16 56.82	1.40	23 35 50.1	23 18 49.0	42.4	5.0
Feb. 2	4 17 32.91	4 18 10.71	+ 1.54	S. 23 1 41.7	S. 22 44 28.7	+42.9	4.9
4	4 18 50.20	4 19 31.36	1.68	22 27 10.4	22 9 47.3	43.4	4.9
6	4 20 14.16	4 20 58.60	1.82	21 52 19.8	21 34 48.2	43.7	4.9
8	4 21 44.65	4 22 32.28	1.95	21 17 12.8	20 59 34.1	44.0	4.8
10	4 23 21.48	4 24 12.23	+ 2.08	S. 20 41 52.4	S. 20 24 8.1	+44.3	4.8
12	4 25 4.49	4 25 58.26	2.21	20 6 21.5	19 48 32.9	44.5	4.8
14	4 26 53.52	4 27 50.23	2.33	19 30 42.6	19 12 51.0	44.6	4.7
16	4 28 48.39	4 29 47.98	2.45	18 54 58.4	18 37 5.0	44.7	4.7
18	4 30 48.96	4 31 51.33	+ 2.57	S. 18 19 11.2	S. 18 1 17.0	+44.8	4.7
20	4 32 55.07	4 34 0.16	2.68	17 43 22.9	17 25 29.0	44.8	4.7
22	4 35 6.59	4 36 14.34	2.80	17 7 35.6	16 49 42.9	44.7	4.6
24	4 37 23.39	4 38 33.74	2.90	16 31 51.4	16 14 1.2	44.6	4.6
26	4 39 45.36	4 40 58.24	+ 3.01	S. 15 56 12.6	S. 15 38 25.8	+44.5	4.6
28	4 42 12.37	4 43 27.72	3.11	15 20 41.1	S. 15 2 58.8	44.3	4.5
Mar. 2	4 44 44.28		+ 3.22	S. 14 45 19.2		+44.1	4.5

MEAN TIME.

Month and Day.	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1888.	^{h m}	^{° ' "}		^{h m}	^{° ' "}	^{° ' "}	
Dec. 23	12 17' 1	S. 3 35	0' 4129	18 4' 9	164 9	S. 1 31	0' 4340
1889.							
Jan. 4	12 25' 5	3 55	0' 3890	17 25' 9	166 36	0 57	0' 4391
16	12 31' 1	3 53	0' 3643	16 44' 1	168 59	S. 0 24	0' 4439
28	12 33' 4	3 25	0' 3398	15 59' 1	171 19	N. 0 8	0' 4486
Feb. 9	12 38' 4	2 30	0' 3174	15 10' 7	173 36	0 40	0' 4532
21	12 28' 0	S. 1 10	0' 2995	14 19' 0	175 50	1 11	0' 4576
Mar. 5	12 20' 7	N. 0 30	0' 2884	13 24' 5	178 1	1 41	0' 4619
17	12 11' 6	2 20	0' 2860	12 28' 2	180 10	2 11	0' 4661
29	12 2' 2	4 7	0' 2932	11 31' 6	182 17	2 40	0' 4701
Apr. 10	11 53' 8	5 39	0' 3093	10 36' 2	184 21	3 8	0' 4739
22	11 47' 6	6 48	0' 3322	9 42' 9	186 24	3 35	0' 4776
May 4	11 44' 3	7 30	0' 3597	8 52' 6	188 24	4 1	0' 4812
16	11 44' 0	7 46	0' 3896	8 5' 2	190 23	4 27	0' 4846
28	11 46' 5	7 41	0' 4199	7 20' 5	192 20	4 53	0' 4878
June 9	11 51' 5	7 15	0' 4496	6 38' 4	194 16	5 17	0' 4909
21	11 58' 7	6 34	0' 4777	5 58' 4	196 10	5 41	0' 4939
July 3	12 7' 6	5 41	0' 5039	5 20' 1	198 3	6 4	0' 4968
15	12 18' 0	4 37	0' 5278	4 43' 3	199 54	6 26	0' 4995
27	12 29' 6	3 27	0' 5493	4 7' 6	201 45	6 48	0' 5020
Aug. 8	12 42' 1	2 11	0' 5682	3 32' 9	203 34	7 9	0' 5044
20	12 55' 5	N. 0 51	0' 5847	2 59' 0	205 22	7 30	0' 5067
Sept. 1	13 9' 5	S. 0 30	0' 5987	2 25' 9	207 9	7 50	0' 5088
13	13 24' 1	1 52	0' 6101	1 53' 2	208 56	8 9	0' 5108
25	13 39' 1	3 13	0' 6191	1 21' 0	210 41	8 27	0' 5127
Oct. 7	13 54' 5	4 31	0' 6255	0 49' 1	212 26	8 45	0' 5144
19	14 10' 2	5 45	0' 6294	0 17' 5	214 10	9 3	0' 5160
31	14 26' 0	6 54	0' 6308	23 43' 6	215 54	9 19	0' 5175
Nov. 12	14 42' 0	7 57	0' 6297	23 12' 2	217 37	9 35	0' 5188
24	14 57' 9	8 52	0' 6260	22 40' 9	219 20	9 51	0' 5200
Dec. 6	15 13' 6	9 39	0' 6197	22 9' 3	221 3	10 6	0' 5211
18	15 29' 1	10 16	0' 6109	21 37' 5	222 45	10 20	0' 5221
30	15 44' 0	10 43	0' 5995	21 5' 1	224 26	10 34	0' 5229
42	15 58' 2	S. 10 58	0' 5856	20 32' 0	226 8	N. 10 47	0' 5226

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
Feb. 10	h m s	h m s	s	° ' "	° ' "	"	"
12	12 31 59.32	12 31 42.55	- 0.67	S. 2 20 55.6	S. 2 24 55.2	+ 14.8	4.3
14	12 31 24.41	12 31 4.91	0.78	2 8 44.5	2 2 23.7	15.7	4.3
16	12 30 44.06	12 30 21.87	0.90	1 55 52.7	1 49 11.9	16.5	4.3
18	12 29 58.38	12 29 33.58	1.01	1 42 21.4	1 35 21.4	17.5	4.4
20	12 29 7.49	12 28 40.14	- 1.11	S. 1 28 12.2	S. 1 20 53.8	+ 18.1	4.4
22	12 28 11.55	12 27 41.75	1.22	1 13 26.4	1 5 50.4	18.8	4.4
24	12 27 10.74	12 26 38.57	1.32	0 58 6.0	0 50 13.5	19.5	4.5
26	12 26 5.26	12 25 30.85	1.41	0 42 13.2	0 34 5.5	20.2	4.5
28	12 24 55.37	12 24 18.86	- 1.50	S. 0 25 50.5	S. 0 17 28.8	+ 20.8	4.5
Mar. 2	12 23 41.35	12 23 2.88	1.58	S. 0 9 0.6	S. 0 0 26.4	21.3	4.5
4	12 22 23.49	12 21 43.24	1.66	N. 0 8 13.6	N. 0 16 58.8	21.8	4.5
6	12 21 2.16	12 20 20.29	1.73	0 25 48.8	0 34 43.3	22.2	4.6
8	12 19 37.68	12 18 54.39	- 1.79	N. 0 43 41.8	N. 0 52 42.8	+ 22.5	4.6
10	12 18 10.46	12 17 25.93	1.84	1 1 48.9	1 10 56.7	22.8	4.6
12	12 16 40.87	12 15 55.31	1.89	1 20 6.7	1 29 18.4	23.0	4.6
14	12 15 9.32	12 14 22.94	1.92	1 38 31.4	1 47 45.1	23.1	4.6
16	12 13 36.22	12 12 49.20	- 1.95	N. 1 56 59.1	N. 2 6 13.1	+ 23.1	4.6
18	12 12 1.95	12 11 14.52	1.97	2 15 26.5	2 24 38.9	23.0	4.6
20	12 10 16.96	12 9 39.21	1.98	2 33 49.9	2 42 58.9	22.9	4.6
22	12 8 51.63	12 8 3.96	1.99	2 52 5.6	3 1 9.5	22.7	4.6
24	12 7 16.36	12 6 28.87	- 1.98	N. 3 10 10.2	N. 3 19 7.1	+ 22.4	4.6
26	12 5 41.55	12 4 54.46	1.97	3 28 0.0	3 36 48.4	22.1	4.5
28	12 4 7.64	12 3 21.14	1.94	3 45 31.8	3 54 9.7	21.7	4.5
30	12 2 35.02	12 1 49.33	1.91	4 2 41.9	4 11 7.9	21.2	4.5
Apr. 1	12 1 4.12	12 0 19.44	- 1.87	N. 4 19 27.3	N. 4 27 39.7	+ 20.7	4.5
3	11 59 35.33	11 58 51.83	1.83	4 35 44.9	4 43 42.4	20.1	4.5
5	11 58 9.00	11 57 26.88	1.77	4 51 31.9	4 59 13.2	19.4	4.4
7	11 56 45.52	11 56 4.94	1.71	5 6 45.8	5 14 9.5	18.7	4.4
9	11 55 25.18	11 54 46.28	- 1.64	N. 5 21 24.2	N. 5 28 29.5	+ 17.9	4.4
11	11 54 8.28	11 53 31.20	1.56	5 35 25.3	5 42 11.3	17.1	4.3
13	11 52 55.08	11 52 19.95	1.48	5 48 47.3	5 55 13.3	16.3	4.3
15	11 51 45.83	11 51 12.74	1.40	6 1 29.0	6 7 34.3	15.4	4.3
17	11 50 40.70	11 50 9.74	- 1.31	N. 6 13 29.2	N. 6 19 13.4	+ 14.6	4.2
19	11 49 39.87	11 49 11.12	1.22	6 24 47.0	6 30 9.8	13.7	4.2
21	11 48 43.50	11 48 17.02	1.13	6 35 21.7	6 40 22.7	12.8	4.2
23	11 47 51.72	11 47 27.60	1.03	6 45 12.8	6 49 51.8	11.9	4.1
25	11 47 4.67	11 46 42.95	- 0.93	N. 6 54 19.7	N. 6 58 36.6	+ 10.9	4.1
27	11 46 22.45	11 46 3.18	0.83	7 2 42.4	7 6 37.0	10.0	4.0
29	11 45 45.15	11 45 28.36	0.73	7 10 20.5	7 13 52.8	9.1	4.0
May 1	11 45 12.84	11 44 58.57	0.62	7 17 14.1	7 20 24.4	8.2	4.0
3	11 44 45.57	11 44 33.83	- 0.52	N. 7 23 23.6	N. 7 26 11.9	+ 7.2	3.9
5	11 44 23.36	11 44 14.15	0.41	7 28 49.3	7 31 15.9	6.3	3.9
7	11 44 6.21	11 43 59.53	0.30	7 33 31.8	7 35 37.0	5.4	3.9
	11 43 54.11	11 43 49.93	- 0.20	N. 7 37 31.6	N. 7 39 15.8	+ 4.6	3.8

AT TRANSIT AT GREENWICH.

Month and Day.	Apparent Right Ascension.	App. R.A. on intermediate Day.	Var. of R.A. in 1 Hour of Long.	Apparent Declination.	App. Dec. on intermediate Day.	Var. of Dec. in 1 Hour of Long.	Hor. Par.
	h m s	h m s	"	° ' "	° ' "	"	"
May 9	11 43 47.00	11 43 45.31	- 0.10	N. 7 40 49.6	N. 7 42 13.3	+ 3.7	3.8
11	11 43 44.85	11 43 45.61	+ 0.01	7 43 26.8	7 44 30.4	2.9	3.7
13	11 43 47.58	11 43 50.74	0.11	7 45 24.1	7 46 8.0	2.0	3.7
15	11 43 55.10	11 44 0.64	0.20	7 46 42.3	7 47 7.1	1.2	3.6
17	11 44 7.35	11 44 15.21	+ 0.30	N. 7 47 22.6	N. 7 47 28.8	+ 0.5	3.6
19	11 44 24.23	11 44 34.39	0.40	7 47 25.9	7 47 13.9	- 0.3	3.5
21	11 44 45.68	11 44 58.09	0.49	7 46 53.0	7 46 23.3	1.1	3.5
23	11 45 11.61	11 45 26.24	0.59	7 45 44.9	7 44 57.9	1.8	3.5
25	11 45 41.95	11 45 58.74	+ 0.68	N. 7 44 2.5	N. 7 42 58.6	- 2.5	3.4
27	11 46 16.59	11 46 35.50	0.77	7 41 46.6	7 40 26.5	3.2	3.4
29	11 46 55.46	11 47 16.45	0.85	7 38 58.4	7 37 22.5	3.8	3.3
31	11 47 38.46	11 48 1.46	0.94	7 35 38.8	7 33 47.6	4.5	3.3
June 2	11 48 25.46	11 48 50.44	+ 1.02	N. 7 31 48.9	N. 7 29 42.9	- 5.1	3.3
4	11 49 16.38	11 49 43.27	1.10	7 27 29.7	7 25 9.4	5.7	3.2
6	11 50 11.10	11 50 39.84	1.18	7 22 42.2	7 20 8.3	6.3	3.2
8	11 51 9.49	11 51 40.03	1.25	7 17 27.6	7 14 40.4	6.8	3.2
10	11 52 11.44	11 52 43.71	+ 1.33	N. 7 11 46.8	N. 7 8 46.9	- 7.4	3.1
12	11 53 16.82	11 53 50.77	1.40	7 5 40.8	7 2 28.7	7.9	3.1
14	11 54 25.55	11 55 1.12	1.47	6 59 10.6	6 55 46.6	8.4	3.1
16	11 55 37.49	11 56 14.65	1.53	6 52 16.9	6 48 41.5	8.9	3.0
18	11 56 52.57	11 57 31.26	+ 1.60	N. 6 45 0.6	N. 6 41 14.3	- 9.3	3.0
20	11 58 10.70	11 58 50.88	+ 1.66	N. 6 37 22.6	N. 6 33 25.7	- 9.8	3.0

MEAN TIME.

Month and Day.	Right Ascension.	Declination.	Log. of Dist. from the Earth.	Meridian Passage.	Helio- centric Longitude.	Helio- centric Latitude.	Log. of Rad. Vect.
	Noon.	Noon.	Noon.		Noon.	Noon.	Noon.
1888.	h m	° '		h m	° '	° '	
Dec. 23	0 30.6	S. 5 3	0.3531	6 19.9	28 17	S. 6 54	0.3986
1889.							
Jan. 4	0 41.0	3 16	0.3840	5 43.1	31 11	6 48	0.4000
16	0 53.3	S. 1 22	0.4123	5 8.3	34 4	6 41	0.4013
28	1 7.4	N. 0 38	0.4381	4 35.1	36 55	6 34	0.4025
Feb. 9	1 22.7	2 40	0.4611	4 3.2	39 46	6 25	0.4036
21	1 39.2	4 42	0.4814	3 32.5	42 36	6 15	0.4047
Mar. 5	1 56.6	6 43	0.4990	3 2.7	45 24	6 4	0.4056
17	2 14.9	8 41	0.5140	2 33.7	48 12	5 53	0.4065
29	2 33.9	10 34	0.5265	2 5.4	51 0	5 41	0.4073
Apr. 10	2 53.5	12 21	0.5366	1 37.8	53 46	5 28	0.4079
22	3 13.7	14 1	0.5443	1 10.6	56 32	5 14	0.4085
May 4	3 34.3	15 32	0.5497	0 44.0	59 18	5 0	0.4090
16	3 55.4	16 53	0.5528	0 17.8	62 3	4 45	0.4094
28	4 16.7	18 4	0.5538	23 49.7	64 47	4 29	0.4097
June 9	4 38.3	19 4	0.5526	23 24.1	67 32	4 13	0.4099
21	5 0.0	19 52	0.5491	22 58.5	70 16	3 56	0.4100
July 3	5 21.7	20 29	0.5435	22 33.0	73 0	3 39	0.4100
15	5 43.3	20 53	0.5355	22 7.2	75 43	3 21	0.4099
27	6 4.6	21 7	0.5253	21 41.2	78 27	3 2	0.4097
Aug. 8	6 25.5	21 10	0.5128	21 14.8	81 11	2 44	0.4094
20	6 45.8	21 4	0.4978	20 47.7	83 55	2 25	0.4091
Sept. 1	7 5.3	20 50	0.4803	20 19.9	86 39	2 5	0.4086
13	7 23.8	20 29	0.4601	19 51.1	89 24	1 45	0.4080
25	7 41.0	20 5	0.4373	19 21.0	92 9	1 25	0.4074
Oct. 7	7 56.7	19 40	0.4118	18 49.4	94 54	1 5	0.4066
19	8 10.6	19 17	0.3836	18 15.9	97 40	0 44	0.4058
31	8 22.2	19 0	0.3531	17 40.0	100 27	0 23	0.4049
Nov. 12	8 31.0	18 53	0.3206	17 1.4	103 15	S. 0 2	0.4038
24	8 36.5	19 1	0.2871	16 19.5	106 3	N. 0 19	0.4027
Dec. 6	8 38.0	19 28	0.2540	15 33.6	108 52	0 40	0.4016
18	8 35.2	20 16	0.2236	14 43.4	111 43	1 1	0.4003
30	8 28.1	21 21	0.1988	13 48.9	114 34	1 22	0.3989
42	8 17.3	N. 22 37	0.1829	12 50.9	117 26	N. 1 43	0.3974

AT TRANSIT AT GREENWICH.

Month and Day.	<i>Apparant</i> Right Ascension.	<i>App. R.A.</i> on intermediate Day.	<i>Var. of</i> <i>R.A.</i> in 1 Hour of Long.	<i>Apparant</i> Declination.	<i>App. Dec.</i> on intermediate Day.	<i>Var. of</i> <i>Dec.</i> in 1 Hour of Long.	Hor. Par.
Dec. 13	h m s 8 36 49.23	h m s 8 36 31.45	— 0.70	N.19 56 0.1	V.20 0 12.8	+10.4	5.2
15	8 36 11.81	8 35 50.30	0.86	20 4 33.5	20 9 2.3	11.0	5.2
17	8 35 26.92	8 35 1.68	1.01	20 13 39.1	20 18 23.7	11.7	5.3
19	8 34 34.60	8 34 5.68	1.17	20 23 15.9	20 28 15.5	12.3	5.3
21	8 33 34.95	8 33 2.40	— 1.32	N.20 33 22.4	N.20 38 36.3	+12.9	5.4
23	8 32 28.07	8 31 51.99	1.47	20 43 57.0	20 49 24.3	13.5	5.4
25	8 31 14.19	8 30 34.70	1.61	20 54 57.8	21 0 37.3	14.0	5.5
27	8 29 53.52	8 29 10.72	1.75	21 6 22.5	21 12 13.2	14.5	5.5
29	8 28 26.34	8 27 40.40	— 1.88	N.21 18 8.9	N.21 24 9.3	+14.9	5.6
31	8 26 52.96	8 26 4.06	— 2.01	N.21 39 14.1	N.21 36 23.0	+15.3	5.6

The Corrections according to NEWCOMB applied to the Moon's Longitudes and Latitudes from HANSEN's Tables, in computing the Right Ascensions and Declinations in pp. V. to XII. of each month.

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
1	-19°1'	+1°8'	-17°8'	+1°2'	-17°4'	+1°1'	-16°0'	-0°2'	-15°3'	-0°9'	-15°2'	-1°3'
2	19°0'	1°8'	17°3'	0°9'	17°1'	0°8'	15°7'	0°5'	15°2'	1°1'	15°4'	1°3'
3	18°6'	1°6'	16°8'	0°6'	16°7'	0°4'	15°5'	0°7'	15°2'	1°2'	15°6'	1°3'
4	-18°0'	+1°4'	-16°3'	+0°3'	-16°3'	+0°1'	-15°3'	-0°9'	-15°2'	-1°3'	-15°9'	-1°4'
5	17°4'	1°2'	15°9'	0°0'	15°9'	-0°3'	15°2'	1°1'	15°3'	1°4'	16°2'	1°0'
6	16°7'	0°9'	15°5'	-0°3'	15°6'	0°6'	15°1'	1°2'	15°4'	1°4'	16°5'	0°8'
7	-16°1'	+0°6'	-15°2'	-0°6'	-15°3'	-0°8'	-15°2'	-1°3'	-15°7'	-1°3'	-16°9'	-0°5'
8	15°6'	+0°3'	15°0'	0°8'	15°2'	1°0'	15°4'	1°4'	16°1'	1°2'	17°4'	-0°1'
9	15°3'	0°0'	15°0'	1°0'	15°1'	1°1'	15°7'	1°4'	16°6'	1°0'	17°9'	+0°3'
10	-15°1'	-0°3'	-15°1'	-1°2'	-15°1'	-1°2'	-16°0'	-1°3'	-17°2'	-0°8'	-18°5'	+0°7'
11	15°0'	0°6'	15°3'	1°3'	15°3'	1°3'	16°5'	1°1'	17°7'	0°5'	19°0'	1°1'
12	15°0'	0°9'	15°5'	1°4'	15°6'	1°3'	17°0'	0°9'	18°2'	-0°1'	19°4'	1°4'
13	-15°1'	-1°1'	-15°7'	-1°4'	-15°9'	-1°3'	-17°5'	-0°6'	-18°7'	+0°3'	-19°6'	+1°7'
14	15°2'	1°2'	16°0'	1°3'	16°3'	1°2'	18°0'	-0°3'	19°1'	0°8'	19°5'	1°8'
15	15°4'	1°3'	16°3'	1°2'	16°7'	1°0'	18°4'	+0°1'	19°3'	1°2'	19°3'	1°7'
16	-15°6'	-1°4'	-16°6'	-1°0'	-17°1'	-0°8'	-18°7'	+0°5'	-19°4'	+1°5'	-18°9'	+1°6'
17	15°7'	1°4'	16°9'	0°8'	17°5'	0°5'	18°8'	0°9'	19°3'	1°7'	18°3'	1°3'
18	15°9'	1°3'	17°1'	0°5'	17°8'	-0°2'	18°8'	1°2'	19°0'	1°7'	17°7'	1°0'
19	-16°2'	-1°2'	-17°3'	-0°1'	-18°1'	+0°1'	-18°6'	+1°4'	-18°5'	+1°6'	-17°1'	+0°6'
20	16°4'	1°0'	17°5'	+0°2'	18°2'	0°5'	18°3'	1°6'	18°0'	1°4'	16°6'	+0°2'
21	16°7'	0°7'	17°6'	0°6'	18°2'	0°9'	18°0'	1°6'	17°5'	1°2'	16°1'	-0°2'
22	-17°0'	-0°4'	-17°8'	+1°0'	-18°2'	+1°2'	-17°6'	+1°5'	-17°0'	+0°9'	-15°7'	-0°5'
23	17°3'	0°0'	18°0'	1°3'	18°1'	1°5'	17°3'	1°3'	16°5'	0°6'	15°4'	0°7'
24	17°6'	+0°3'	18°1'	1°5'	17°9'	1°6'	17°1'	1°1'	16°1'	+0°3'	15°3'	0°9'
25	-17°9'	+0°7'	-18°0'	+1°6'	-17°7'	+1°6'	-16°8'	+0°8'	-15°8'	0°0'	-15°3'	-1°1'
26	18°2'	1°0'	17°9'	1°6'	17°5'	1°5'	16°4'	0°5'	15°6'	-0°4'	15°2'	1°2'
27	18°4'	1°3'	17°8'	1°5'	17°3'	1°3'	16°2'	+0°2'	15°4'	0°7'	15°3'	1°3'
28	-18°5'	+1°6'	-17°6'	+1°3'	-17°1'	+1°1'	-16°0'	-0°1'	-15°3'	-0°9'	-15°3'	-1°4'
29	18°5'	1°7'	-	-	16°9'	0°8'	15°7'	0°4'	15°3'	1°1'	15°4'	1°4'
30	18°4'	1°6'	-	-	16°6'	0°4'	15°5'	-0°7'	15°2'	1°2'	15°5'	-1°3'
31	-18°1'	+1°4'	-	-	-16°3'	+0°1'	-	-	-15°2'	-1°2'	-	-

The Corrections according to NEWCOMB applied to the Moon's Longitudes and Latitudes from HANSEN's Tables, in computing the Right Ascensions and Declinations in pp. V. to XII. of each month.

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
1	^N -15.6	^N -1.2	^N -16.6	^N -0.2	^N -17.9	^N +1.1	^N -18.4	^N +1.6	^N -17.9	^N +1.0	^N -17.2	^N 0.0
2	15.8	1.0	17.0	+0.1	18.1	1.4	18.3	1.6	17.7	0.7	16.8	-0.3
3	16.0	0.8	17.3	0.5	18.3	1.6	18.3	1.5	17.5	0.5	16.5	0.6
4	-16.3	-0.5	-17.7	+0.8	-18.5	+1.7	-18.2	+1.3	-17.2	+0.2	-16.3	-0.9
5	16.7	-0.2	18.1	1.1	18.6	1.7	18.1	1.0	17.0	-0.2	16.1	1.1
6	17.2	+0.2	18.5	1.4	18.7	1.6	17.9	0.7	16.7	0.6	15.9	1.3
7	-17.8	+0.5	-18.9	+1.6	-18.7	+1.3	-17.7	+0.3	-16.4	-0.9	-15.7	-1.4
8	18.4	0.9	19.2	1.7	18.5	1.0	17.4	0.0	16.1	1.1	15.6	1.4
9	18.9	1.3	19.3	1.7	18.3	0.6	17.1	-0.4	15.9	1.3	15.5	1.4
10	-19.2	+1.5	-19.1	+1.5	-17.9	+0.3	-16.8	-0.7	-15.7	-1.4	-15.4	-1.3
11	19.5	1.7	18.8	1.2	17.5	-0.1	16.4	1.0	15.4	1.4	15.4	1.2
12	19.6	1.7	18.5	0.9	17.1	0.5	16.1	1.2	15.2	1.3	15.5	1.0
13	-19.4	+1.6	-18.0	+0.5	-16.6	-0.8	-15.8	-1.3	-15.3	-1.2	-15.7	-0.8
14	19.0	1.4	17.4	+0.1	16.2	1.0	15.6	1.4	15.5	1.1	16.0	0.5
15	18.6	1.1	16.9	-0.2	15.8	1.2	15.4	1.4	15.8	1.0	16.5	-0.2
16	-18.0	+0.8	-16.4	-0.5	-15.6	-1.3	-15.4	-1.3	-16.1	-0.8	-17.0	+0.2
17	17.4	+0.4	16.0	0.8	15.4	1.4	15.5	1.3	16.5	0.5	17.5	0.5
18	16.8	0.0	15.6	1.0	15.3	1.4	15.8	1.2	17.0	-0.2	18.1	0.8
19	-16.3	-0.3	-15.4	-1.2	-15.4	-1.3	-16.1	-1.0	-17.5	+0.2	-18.7	+1.2
20	15.9	0.6	15.2	1.3	15.7	1.2	16.5	0.7	18.1	0.5	19.3	1.5
21	15.5	0.8	15.2	1.4	16.1	1.1	17.0	0.4	18.6	0.9	19.7	1.7
22	-15.3	-1.0	-15.4	-1.4	-16.4	-0.9	-17.5	-0.1	-19.1	+1.2	-20.0	+1.8
23	15.2	1.2	15.6	1.3	16.7	0.7	18.0	+0.3	19.4	1.5	20.0	1.8
24	15.2	1.3	15.9	1.3	17.1	-0.4	18.4	0.7	19.5	1.7	19.8	1.6
25	-15.2	-1.3	-16.1	-1.2	-17.5	0.0	-18.8	+1.0	-19.5	+1.7	-19.4	+1.3
26	15.4	1.4	16.3	0.9	17.8	+0.4	19.0	1.3	19.2	1.6	18.9	0.9
27	15.6	1.3	16.6	0.6	18.0	0.8	19.0	1.6	18.9	1.4	18.4	0.5
28	-15.7	-1.2	-16.9	-0.3	-18.2	+1.1	-18.9	+1.7	-18.6	+1.2	-17.8	+0.1
29	15.9	1.0	17.2	0.0	18.3	1.4	18.7	1.7	18.1	0.8	17.2	-0.2
30	16.1	0.8	17.5	+0.4	-18.4	+1.5	18.5	1.5	-17.6	+0.4	16.7	0.5
31	-16.3	-0.5	-17.7	+0.8	-	-	-18.2	+1.3	-	-	-16.4	-0.8

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